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MATERIALS INVENTORY MANAGEMENT MANUAL

Supply and Equipment Management Office
NASA Headquarters

Washington DC 20546

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PREFACE

This NASA Materials Inventory Management Manual (NHB 4100.1) is issued pursuant to Section 203(c)(1) of the National Aeronautics and Space Act of 1958 (42 USC 2473). It sets forth policy, performance standards, and procedures governing the acquisition, management and use of materials.

This Manual is effective upon receipt. This Manual is issued in loose-leaf form and will be revised by page changes.

Comments or suggestions should be addressed to the Supply and Equipment Management Office, Code JIE, NASA Headquarters, Washington, DC 20546.

NHB 4100.1B dated January 1985, NMI 4050.2F dated December 13, 1991, and NMI 4060.1C dated December 13, 1991, are cancelled.


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and Security Division

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CONTENTS

PAGE

CHAPTER I: GENERAL PROVISIONS

100	Purpose.....	1-1
101	Applicability.....	1-1
102	Changes to Manual.....	1-1
103	Deviations From This Manual.....	1-1
104	Policy.....	1-2
105	Responsibilities.....	1-4
106	Definitions.....	1-7
107	Cataloging Requirements.....	1-7

CHAPTER II: MATERIALS INVENTORY CONTROL

200	Inventory Control Program.....	2-1
201	Classification of Inventory.....	2-1
202	Inventory Type Accounts.....	2-2
203	Pricing of Inventories.....	2-3
204	Materials Inventory Control System.....	2-3
205	Criteria for Classifying Stores Stock.....	2-4
206	Criteria for Classifying Program Stock.....	2-5
207	Criteria for Classifying Standby Stock.....	2-6
208	Physical Inventory of Materials.....	2-6
209	Management of Shelf-Life Materials.....	2-6
210	Precious Metals.....	2-10
211	Returnable Containers.....	2-11

CHAPTER III: MATERIALS INVENTORY TRANSACTIONS

300	Issuing Items.....	3-1
301	Inventory Replenishments.....	3-2
302	Special Item Controls.....	3-6
303	Return to Inventory.....	3-6
304	Transfer Between Status Codes/Reclassification.....	3-6
305	Adding Line Items to Inventory.....	3-7
306	Retention of Inventory.....	3-8
307	Adjustments to Materials Inventory.....	3-11

CHAPTER IV: PHYSICAL INVENTORY OF MATERIALS

400	Requirement for Physical Inventories.....	4-1
401	Inventory Methods.....	4-1
402	General Procedures.....	4-1
403	Sampling Procedures.....	4-2
404	Complete Lot Inventory Procedures.....	4-3
405	Adjustments as a Result of Inventories.....	4-3
406	High Demand Item Review for Periodic Inventories.....	4-4

CHAPTER V: REPORTS AND FORMS

500	Analysis of Inventories Report (NASA Form 1489).....	5-1
501	Management Products for Inventory Systems Controlled by Automatic Data Processing.....	5-1
502	Headquarters Reporting Module (HRM).....	5-1
503	Physical Inventory of Materials Annual Report (NASA Form 1619).....	5-2
504	Semiannual Report of Personal Property Management Operations (NASA Form 1324).....	5-2
505	General Requirement for all Reports.....	5-2

CHAPTER VI: FUNCTIONAL REVIEWS

600	Functional Review Coverage and Frequency.....	6-1
601	Review Preparations.....	6-1
602	Entrance and Exit Meetings.....	6-2
603	Report Findings.....	6-2

APPENDICES

Appendix A,	Definition of Terms.....	A-1
Appendix B,	Materials Inventory Type Accounts Summary.....	B-1
Appendix C,	Basic Stock Reorder Formula.....	C-1
Appendix D,	Materials Inventory Management Review Criteria...	D-1
Appendix E,	Sample Shelf-Life Inspection/Reinspection Letters.....	E-1
Appendix F,	FEDSTRIP Activity Address Code Data.....	F-1
Appendix G,	Sample Procurement Cost Analysis Summary.....	G-1
Appendix H,	Sample Economic Order Quantity (EOQ) Table.....	H-1

CHAPTER I: GENERAL PROVISIONS

100 PURPOSE

This Manual, issued under the authority of the National Aeronautics and Space Act of 1958, as amended, and other statutory authority by the Supply and Equipment Management Office, Logistics, Aircraft, and Security Division, establishes NASA policies, responsibilities, and procedures for the establishment, operation, and maintenance of materials inventory at NASA Installations.

101 APPLICABILITY

This Manual applies to NASA Headquarters and NASA Field Installations and components thereto. It also applies to onsite contractors required to use the Installation provided materials inventory management system. The policies and requirements of this Manual should be incorporated in contracts for onsite NASA material management/supply support. When the provisions of this Manual conflict with the Federal Acquisition Regulation (FAR), the NASA Federal Acquisition Regulation (NASA/FAR Supplement), NHB 5100.4, or international agreements and procedures governing materials in foreign countries, the provisions of the latter will prevail.

102 CHANGES TO MANUAL

This Manual will be amended by issuing page changes from time-to-time to reflect new or revised policies and procedures. Changed pages will be denoted by a change number and an asterisk in the margin by the revised material. Changes must be implemented within 60 calendar days from the date of issuance, unless otherwise prescribed in the change.

103 DEVIATIONS FROM THIS MANUAL

- a. A deviation is considered to be any of the following:
 - (1) Use of a form different from a Standard or NASA Form prescribed by this Manual;
 - (2) Alteration of a Standard or NASA Form except as authorized by this Manual; or
 - (3) Any policy, procedure, method, or practice inconsistent with that prescribed in this Manual.
- b. Deviations from this Manual will be authorized only when special circumstances make such deviations clearly in the best interests of the Government. Such deviations will be approved only by the Chief, Supply and Equipment Management Office.

c. Requests for authority to deviate from the provisions of this Manual will be submitted to the Chief, Supply and Equipment Management Office, Code JIE, NASA Headquarters. Requests will be submitted by the Installation Director, or authorized representative, and will be submitted as far in advance as the exigencies of the situation will permit. Each request for a deviation will contain as a minimum:

- (1) An identification of the requirement of the NASA Materials Inventory Management Manual from which a deviation is sought.
- (2) A full description of the deviation and the circumstances under which it will be used.
- (3) Detailed reasons supporting the request, including pertinent background information which will contribute to a fuller understanding of the deviation sought.
- (4) A description of the intended effect of the deviation.
- (5) A statement as to whether the deviation has been requested previously and, if so, the circumstances of the previous request.
- (6) A statement indicating the length of time the deviation will be required.

104 POLICY

a. NASA will only acquire materials for mission performance.

b. Unless exempted in writing by the Chief, Supply and Equipment Management Office, or elsewhere in this Manual, all materials inventory will be placed under continuing physical and financial controls. Such controls will be maintained and applied to:

- (1) Support and facilitate accomplishment of the Agency's mission.
- (2) Promote economy in the acquisition, retention, and use of material.
- (3) Achieve maximum use of existing Materials resources.
- (4) Ensure the integrity of the Agency records, accounts, and reports.

- c. Materials shall be acquired for immediate use, for stock based on past usage history, for stock based on anticipated need, or in the case of program and standby stock, for future use to satisfy a known specific requirement.
- d. Government-owned material will be used only for official purposes.
- e. Selected items designated for support of a repair program that meet the criteria of equipment may be held in the materials inventory as program stock.
- f. Materials returned to stock will be accounted for as inventory under the appropriate status code.
- g. Materials will be physically inventoried periodically in accordance with Chapter IV and appropriate investigations and adjustments made to the records.
- h. Materials which are no longer required for the performance of NASA programs will be processed for redistribution or disposal.
- i. Auditable document files and records will be maintained to support transactions against all inventory accounts.
- j. Duties and responsibilities for keeping accountable records and for physical custody of materials inventories, and systems thereto, shall be segregated, to the extent possible, in order to minimize opportunities for unauthorized, fraudulent, or otherwise irregular acts and to support internal controls. For example, the individuals responsible for processing material receipts should not be allowed to process material issues. Likewise, the individuals responsible for storage and warehousing functions should not be given the capability to update or change quantities on materials inventory asset records.
- k. The Installation materials inventory management system shall provide for compliance with the various policies governing the acquisition, storage, control and distribution of hazardous materials.

105 RESPONSIBILITIES

a. Program and Institutional Associate Administrators

Program and Institutional Associate Administrators, NASA Headquarters, or as redelegated to specific Program Office Directors under the lead center concept, are responsible for appropriate coordination, approval, and allocation of supplies within their programs in order to minimize cost and to make effective use of available resources.

b. Chief, Supply and Equipment Management Office

The Director, Supply and Equipment Management Office, NASA Headquarters, is the functional manager for all matters pertaining to NASA materials inventory management. Through the Manager, Supply Programs, the Chief is responsible for providing functional management, leadership, and assistance in the implementation of an effective materials inventory management program, including the following:

- (1) Formulating, publishing, and implementing Agency-wide policies and procedures related to the establishment, maintenance, and oversight of material inventory systems.
- (2) Interfacing with other organizations, public and private, on matters relating to, or affecting, NASA material support systems and policies.
- (3) Assisting NASA Installation management in the development and operation of internal control systems and ensuring their compatibility with Agency programs and policies.
- (4) Conducting reviews and assessments of materials inventory management activities and reporting findings, facts, and trends to appropriate NASA management.
- (5) Identifying specific data reporting requirements.

c. Installation Directors

Installation Directors are responsible for the following:

- (1) Overseeing all NASA-owned material assets assigned to the Installations.
- (2) Approving and allocating material resources in the most effective manner.

- (3) Providing management direction and the resources necessary to accomplish the prescribed material inventory controls and accounting requirements.
- (4) Establishing and maintaining a well-defined material inventory program.
- (5) Appointing a single Supply and Equipment Management Officer (SEMO) to perform the functions and responsibilities in this manual.
- (6) Appointing an Inventory Adjustment Officer who will be senior to, or of equivalent rank with, the SEMO.

d. Supply and Equipment Management Officer

The SEMO is the principal official appointed by the Installation Director for functional administration of supply and equipment management at the Installation. The SEMO is primarily responsible for:

- (1) Ensuring that Installation policies and procedures necessary to comply with this Manual are developed, implemented, and maintained.
- (2) Establishing, maintaining and managing a well-defined inventory control system in accordance with this Manual and financial management regulations.
- (3) Recommending to the Installation Director, in consultation with the Procurement Officer, Financial Management Officer, Contracting Officer and Contracting Officer's Technical Representative, the operating procedures which would best serve the mission, program, and financial concerns of the Installation.
- (4) Determining items to be designated for control as material inventory.
- (5) Ensuring that material inventory items are properly classified in accordance with this manual and in coordination with the Financial Management Officer and other Installation personnel as required.
- (6) Designating storage areas and supply points which provide for the preservation and protection of material inventories.
- (7) Designating a Precious Metals and Critical Materials Monitor/Coordinator to be responsible for maintaining surveillance over the acquisition and control of precious metals.

- (8) Establishing and maintaining interface with institutional, industrial, and support contractor organizations using and administering material inventories and personal property.
- (9) Sharing joint responsibility with the Financial Management Officer for material fiscal reports.
- (10) Interfacing with the Financial Management Officer in reconciling inventory records and financial records.
- (11) Ensuring that senior Installation management is kept advised of significant supply matters.
- (12) Providing the Chief, Supply and Equipment Management Office, NASA Headquarters, a copy of each Installation supply support services contract or statement of work.
- (13) Designating an Activity Address Code (AAC) Coordinator to be responsible for coordinating the assignment, maintenance and surveillance of activity address codes used by NASA Installations and NASA contractors to acquire supplies from Government supply sources.

e. Inventory Adjustment Officer

The Inventory Adjustment Officer, appointed by the Installation Director, is responsible for reviewing and approving inventory adjustment reports as outlined in Chapter III, paragraph 307.

f. Designees

The responsible individual may authorize a designee in writing to act on his or her behalf. The responsible individual will retain all responsibilities that are given to a designee to execute. The designee will ensure that feedback is provided to the responsible individual to keep that person fully and currently informed of significant actions, problems, or other matters of substance.

g. Responsibility of the Individual Employee

Each employee is responsible for Government property as set forth in the Standards of Conduct for NASA Employees, NHB 1900.1, Section 1207.103. This includes the following:

- (1) Using, caring, and protecting properly all Government property under the individual's custody and control. A Government employee may be subject to disciplinary action for any loss, damage, or destruction of Government property resulting from the employee's negligence, misuse, dishonesty, or wanton and willful misconduct. Taking disciplinary action does not prevent the Government, in appropriate situations, from enforcing other remedies which may be available to it, such as asserting a claim against the employee. If such action is warranted, the Installation's Chief Counsel will provide guidance. If disciplinary action is recommended, the matter will be referred to the employee's supervisor who should contact the Personnel Officer for guidance. An employee will not be held liable for the loss, damage, or destruction of property resulting from the employee's performing or failing to perform an action because of a reasonable error in judgment or because of a physical limitation.
- (2) Notifying the Installation's Security Officer immediately if theft of Government property is suspected.
- (3) Ensuring that such property is used only in the conduct of official business.
- (4) Identifying property not being actively used in pursuit of approved NASA programs and projects.
- (5) Ensuring that serviceable property is returned to stock when no longer needed.

106 DEFINITIONS

Terms commonly used in connection with this Manual are defined in Appendix A.

107 CATALOGING REQUIREMENTS

All items of materials stock inventory will be cataloged in accordance with NHB 4410.1, "Utilization and Maintenance of Federal Cataloging," which implements the Federal Property Management Regulations, Subchapter E, Subpart 101-30 on the Federal Cataloging System.

CHAPTER II: MATERIALS INVENTORY CONTROL

200 INVENTORY CONTROL PROGRAM

- a. In keeping with the policy set forth in paragraph 104 of this Manual, NASA Installations will establish and maintain a system to identify, document, and physically control all items of inventory, i.e., Stores Stock, Program Stock, and Standby Stock, as defined in paragraph 201.
- b. Effective controls must be established to prevent the stockpiling of materials outside of the designated Installation materials inventory control system.
- c. If an item is considered hazardous material, the decision on whether or not to stock it should be based on health, potential environmental impact and safety policies. The costs and complexities involved in any future excess/disposal processes should also be considered.

201 CLASSIFICATION OF INVENTORY

NASA materials inventories will be classified under one of the following three codes which define the status of the materials while under inventory control. Using activities are permitted to keep on hand a limited amount of materials for day-to-day operations. In the case of Stores Stock type items, such quantities should normally not exceed a 60-day supply. Supply and Equipment Management Officers are authorized to designate and limit total quantity dollar value of user activity stores stock type items not to exceed \$20,000. Program stock parameters are listed in subparagraph b. For designated bench stocks, quantities stocked shall be in accordance with guidelines contained in subparagraph 306k.

- a. Stores Stock (Status Code 1). Material being held in inventory by the Installation which is repetitively procured, stored, and issued on the basis of recurring demand. Items which are common to several programs or projects and which meet the criteria for stockage under paragraph 205 will be classified as Stores Stock. Reparable items will not be included in Stores Stock; rather, they will be carried as Program Stock or Standby Stock.
- b. Program Stock (Status Code 2). Material acquired by direct purchase or by issue from Stores Stock for a specific program or project. Program Stock may include the following:
 - (1) Items of a special or unique nature; or

- (2) Items including raw materials held for consumption in a shop, a tool crib or bench stock.

To be designated a Program Stock inventory, the extended dollar value of the items maintained therein shall exceed \$75,000. A Program Stock inventory shall be under appropriate Installation inventory and financial accounting controls. Items not meeting the \$75,000 criteria may be maintained in a bench stock operation or under other locally determined controls. Program Stock inventories may include, but are not limited to the following:

- (3) Spare parts, including reparable and replacement assemblies for aircraft, launch vehicles, spacecraft, ground tracking stations, or other equipment.
 - (4) Expendable flight hardware, including launch vehicles (e.g., Scout, Payload Assist Module, External Tank, Inertial Upper Stage), sounding rockets, or nonrecoverable satellites and spacecraft.
 - (5) Items which will be consumed in a fabrication process.
 - (6) Selected items of equipment designated for a repair cycle program.
- c. Standby Stock (Status Code 3). Material held for emergencies for which there is no normal recurring demand but which must be immediately available to preclude delay which might result in loss, damage, or destruction of Government property, danger to life or welfare of personnel, or substantial financial loss to the Government due to an interruption of operations. Standby Stock is not to be used as a repository for items declared excess from Status Codes 1 and 2, or from any other program.

202 INVENTORY TYPE ACCOUNTS

Materials inventory items will be further classified by the type accounts (Account 1200) shown in Appendix B. Determination of the appropriate classification will be based on the Federal Supply Classification Cataloging Handbooks (H2-1). Note that these type accounts parallel those found in NASA Financial Management Manual (FMM) 9254.6. New type accounts will be approved by the Chief, Supply and Equipment Management Office, and the Director, Financial Management Division, NASA Headquarters.

203 PRICING OF INVENTORIES

- a. Additions to inventory by purchase will be recorded in general ledger account 1200 at invoice price less trade discounts. Cash discounts, when taken, are credited to the appropriate general ledger cost account 5x10. Transportation, handling and storage costs should be included in inventory cost when included on the purchasing document and be readily and distinctly related to the item purchased.
- b. Additions to inventory by transfer from other NASA Installations, other Federal agencies or from one status code to another will be recorded in general ledger Account 1200 at the price actually paid for the material. If no payment is made for the material transferred, then the material will be recorded at the lower of the net book value of the transferor or the fair market value.
- c. Items returned to the inventory, for credit or without credit, will be recorded at the lower of the original issue price or the current issue price. Credit shall be allowed only for returns which can be identified to the appropriation and accounting classification coding (i.e. organization, program, project or functional category) of the activity to which the original issue was made. Credit shall not be allowed for any issue made prior to the beginning of the previous fiscal year.
- d. When inventory is replenished through procurement, return or transfer, a redetermination will be made of the average stock record unit price based on the weighted moving average. To do this, the value of the received item will be added to the value of the total quantity on hand, and the sum will be divided by the total of the received quantity plus the quantity on hand. The result is the new unit price.

204 MATERIALS INVENTORY CONTROL SYSTEM

Each NASA Installation will establish and maintain a system to control materials inventory which includes the following:

- a. A single system for managing Stores Stock inventories will be established and maintained.
- b. Program Stock and/or Standby Stock inventory records will be maintained either at individual supply points under a decentralized system or at one control location for all of the supply points as a centralized or consolidated system. Only one set of records will be maintained. All control records will contain adequate and current descriptive data and will accurately reflect the status of each item.

- c. The control system will provide for the identification (through record coding or through use of detail support records) of equipment items designated for support of a repair program when such a program is authorized by the Installation. The system will record issues by equipment serial number or similar control and will identify the issue location.
- d. Perpetual control will be established for all inventories controlled by automatic data processing (ADP), all high demand items in a manual system, and for critical use or security items requiring special attention.
- e. Low demand items managed under a manual system may be maintained under periodic control, except for critical use or security items requiring special attention.
- f. Periodic control inventories will use a stock record card as the control document. No issue data will be posted to this record.
- g. Perpetual inventory control systems will use individual transaction entries for each action affecting an item. Each increase and decrease to stock levels will be supported by an input/output document or comparable ADP record, i.e., issue ticket, receiving report, and inventory adjustment voucher.
- h. The perpetual inventory control record will contain data showing the status of all actions affecting the item, i.e., issues, receipts, due-ins, due-outs, and adjustments.

205 CRITERIA FOR CLASSIFYING STORES STOCK

The basic criteria for classifying items as Stores Stock are contained in paragraph 201a.

- a. Items which would have an Economic Order Quantity (EOQ) in months of supply equivalent to the values in the following table must have at least the number of annual demands shown to qualify as candidates for Stores Stock.

<u>Months of Supply If Under EOQ</u>	<u>Minimum Annual Demands Required</u>
12	2
9	3
6	5
5	7
4	8
3	10
2.5	13
2	16
1.5	20
1	28

- b. The candidate item for stockage must:
 - (1) Be physically adaptable to storage and issue.
 - (2) Have anticipated demand patterns making reasonably accurate forecasts of requirements possible.
 - (3) Have a projected recurring future usage at least meeting the criteria of subparagraph a.
 - (4) Have a shelf-life sufficiently long to permit stockage without unnecessary loss.
- c. Items having recurring demands but not meeting the minimum demand criteria may be carried in Stores Stock if at least one of the following applies:
 - (1) Advance purchase and storage is necessary because of long procurement lead time.
 - (2) An adequate industry distribution system does not exist that would ensure availability.
 - (3) Market conditions are such that an adequate supply can only be ensured through stockage.
 - (4) Volume purchases are necessary to secure timely delivery and advantageous price. However, the amount of the purchase should not exceed the economic retention limit for the item (see paragraph 306d).

206 CRITERIA FOR CLASSIFYING PROGRAM STOCK

- a. Materials meeting the criteria of paragraph 201b held by any organizational element will be classified as Program Stock. Inventory controls initially will be established at the direction of the SEMO and will include an identification of the responsible program or project manager.
- b. Items may be added to Program Stock inventory when authorized, in writing, by a program or project manager or designee. Any items added, whether by replenishment, transfer in or turn-in, shall be identified to a specific program or project.
- c. Equipment items, such as line-replaceable units or components of major systems or subsystems, may be classified as Program Stock when approved for rotation through a repair program or for backup replacement components. Such items will be distinctively tagged or marked to distinguish them from other equipment items managed under NHB 4200.1, "NASA

Equipment Management Manual." Once such items are no longer identified to a repair program or as backup replacement stocks, normal controls under NHB 4200.1 will apply.

207 CRITERIA FOR CLASSIFYING STANDBY STOCK

Materials which are held to meet the requirements of paragraph 201c will be classified as Standby Stock. Items will be added to Standby Stock only upon written justification by a division chief or equivalent.

208 PHYSICAL INVENTORY OF MATERIALS

Each material's inventory will be inventoried on a cyclic or sample basis pursuant to the procedures set forth in Chapter IV of this Manual.

209 MANAGEMENT OF SHELF-LIFE MATERIALS

Following the guidance in Federal Property Management Regulations (FPMR), Subchapter E, subpart 101-27.2, "Management of Shelf-Life Materials," NASA Installations will develop and implement a program to minimize loss and ensure maximum use of shelf-life items prior to their deterioration. A shelf-life item is any item possessing deteriorative or changeable characteristics so that a storage period must be assigned to that item to assure upon issuance that the item will perform satisfactorily. The SEMO will establish a program to identify such items, establish the expiration dates, and control their procurement, storage, issue, and disposal.

- a. Types of Shelf-Life Items. Shelf-life items are classified as nonextendable (Type I) or extendable (Type II). A Type I item has a finite nonextendable storage life after which the item is considered to be unusable. Examples of Type I items are drugs and medicines with certain characteristics. A Type II item has an assigned shelf-life storage period which may be extended after completion of inspection, test or restorative action. Examples of Type II items are paint, ink, tape, printing ribbon, and photographic film.
- b. Shelf-Life Codes. All shelf-life items will be identified in NASA supply inventory systems by a one-digit code (alpha or numeric) which is uniformly used by all Federal agencies. Alpha codes are for nonextendable items and numeric codes are for extendable items.
 - (1) The code designators for items with shelf-life periods of up to 60 months are as follows:

Shelf-life Period (in Months)	<u>Codes</u>	
	Nonextendable Type I	Extendable Type II
1.....	A	-
2.....	B	-
3.....	C	1
4.....	D	-
5.....	E	-
6.....	F	2
9.....	G	3
12.....	H	4
15.....	J	-
18.....	K	5
21.....	L	-
24.....	M	6
27.....	N	-
30.....	P	-
36.....	Q	7
48.....	R	8
60.....	S	9

(2) Code O is used to identify items not included in the shelf-life program.

(3) Code X is used to identify critical end-use items, military essential items and medical items with a shelf-life greater than 60 months. A critical end-use item is any item which is essential to the preservation of life in emergencies, or any item essential to the performance of a major system. NASA Installations must establish the necessary controls for these items to prevent their issuance in an unserviceable condition.

(4) Installations may also establish controls for items with a shelf-life greater than 60 months that are not identified in paragraph (3). Such controls should be established only when they are necessary for effective management of the items.

c. Procurement of Shelf-life Items. In determining requirements of shelf-life items, the length of storage (months of supply) and appropriate contracting techniques for the particular item involved, including specification requirements, industry practices, and storage and delivery procedures shall be considered.

d. Identification and Shipping Requirements. Manufacturers, whenever practicable, shall be required to mark the unit or container with the month and year of manufacture or production and the batch number of all shelf-life items (60 months or less) procured from other than Government supply sources. Whenever practical, suppliers shall be required

to ship or deliver material within a given number of months from the date of manufacture or production. These "age on delivery" requirements should not be imposed in such a manner as to unduly restrict competition at any trade level. The following guidelines are suggested as appropriate for most shelf-life items:

<u>Shelf-life period</u>	<u>Age on delivery</u>
25 months or more	6 months
19 to 24 months	4 months
13 to 18 months	3 months
7 to 12 months	2 months
6 months or less	1 month or less

e. Packaging. To the extent feasible and economical, shelf-life materials will be packaged in such a way to provide for minimum deterioration.

f. Controls and Inspection

(1) Installations will establish the necessary controls to identify shelf-life items on supply system records and where applicable, on related storage locations, and locator records. Shelf-life items must be stored in a manner to ensure the oldest stock on hand is issued first, except where it is not feasible to do so, as in shipments to overseas activities.

(2) Before the end of the designated shelf-life period, Type II items shall be inspected to determine whether the shelf-life period can be extended. This inspection criteria does not apply if the shelf-life item has a line item inventory value of \$300 or less; or if the cost of inspection/testing is significant in relation to the value of the item. If material is found suitable for issuance on the date of inspection, the shelf-life period should be extended for a period equal to 50 percent of the original shelf-life period, and the next reinspection date established accordingly. Upon reinspection, the shelf-life can be extended again up to 50 percent of the original shelf-life as long as the material conforms to the established criteria.

(3) Extension of shelf-life periods based upon inspection of the material shall be documented. (See Appendix E for a sample shelf-life reinspection letter.)

g. Marking. When the shelf-life period of Type II material (except critical end-use items) is extended, only the exterior containers of bulk stocks need be annotated or labeled to indicate the date of inspection and the date

material is to be reinspected. Individual units of issue not classified as having a critical end-use application are not required to be annotated or labeled as long as the supply system maintains identifiable controls to preclude issuance of unserviceable material to a user. At the time of issue/shipment, the dates of inspection and reinspection must be affixed by a label or marked by other means on each unit of issue for Type II items having a critical end-use application.

h. Inventory Analysis

- (1) Installations must periodically conduct an inventory analysis of shelf-life items to determine whether quantities on hand will be issued within the established shelf-life period so arrangements can be made to ensure local use, or redistribution to other Installations or agencies for use. Type I shelf-life items have a definite storage life. When these items cannot be used or redistributed, they shall be disposed of according to governing procedures.
- (2) The analysis of Type II items with a shelf-life of less than 60 months shall be made as follows:

<u>Shelf-life period</u>	<u>Date of Analysis (Prior to item expiration)</u>
48 to 60 months	12 to 16 months
36 to 48 months	8 to 12 months
18 to 36 months	6 to 8 months
12 to 18 months	4 to 6 months
6 to 12 months	3 to 4 months
Up to 6 months	No analysis required

If the analysis of Type II items indicates that the quantity on hand will be issued within the established shelf-life period, inspection is not required. If the analysis indicates that quantities on hand will not be issued within the shelf-life period, the items must be inspected to determine if the shelf-life period can be extended (see subparagraph f for guidelines).

- i. Utilization and Distribution of Shelf-Life Items. When specific quantities of shelf-life items will not be used within the shelf-life period, Installations should determine if they can be returned to the supplier. Items which cannot be returned to the supplier should be reported to the Property Disposal Officer (PDO) for disposition according to NHB 4300.1, "NASA Personal Property Disposal Manual." Items reported will reflect the appropriate disposal/supply condition code and will be clearly marked and documented as shelf-life with the appropriate shelf-life code.

210 PRECIOUS METALS

Precious metals, in any shape or form, are susceptible to theft and other unauthorized use and, therefore, require extraordinary controls from point of receipt to point of use. Procedures for recovery and disposal of precious metals are in NHB 4300.1, "NASA Personal Property Disposal Manual."

a. Definitions

- (1) Precious Metals are those listed below:

Silver	Rhodium
Gold	Ruthenium
Platinum	Iridium
Palladium	Osmium

- (2) Precious Metal Alloys are one or more precious metals combined solely, or in part, with other materials to form an alloyed material or substance in any shape or form for fabrication, testing, or other research purposes.
- (3) Precious Metal End-Items are items in any shape or form consisting solely of one or more precious metals that have been shaped or fabricated for research or testing purposes or used as an entity.

b. Requirements

- (1) NASA Installations will establish controls to prevent the stockpiling of precious metals including alloys and end items. Precious metals, (pure, alloys and end items) will be acquired for a specific program, project, or other work activity only, the planning of which has been approved by the Installation Director.
- (2) Requests for precious metals will be processed through the Installation SEMO for acquisition from Government sources or other NASA Installations, when available, prior to procurement from commercial sources. The precious metals listed in subparagraph a.(1) above are available to all Federal agencies through the Defense Precious Metals Recovery Program at substantially lower costs than commercial sources.

- (3) Precious metals will be maintained under documented control and accounting from the time of receipt to final disposition. Such documentation and related control records should indicate the weight of precious metals to the nearest troy ounce.
- (4) Physical inventories of precious metals on-hand (held for issue or disposition) will be conducted at least annually by someone not having possession or custody of the metals. Adjustments will be documented and processed using the guidelines in Chapter III, paragraph 307. The results of inventories will be reported, in writing, to the Installation SEMO within 30 days after the inventory.
- (5) All losses, including theft of precious metals in any form, or end-items, will be promptly reported to the Installation Security Officer. A survey report will be initiated by the holder of the precious metal(s) in question and processed in accordance with part 3 of NHB 4200.1, "NASA Equipment Management Manual."

211 RETURNABLE CONTAINERS

To ensure timely recovery of deposit and reduced expenditures for demurrage charges, Installation SEMO's must establish and maintain current and detailed control records on returnable containers acquired by NASA directly from vendors, including containers used in providing support to on-site contractors. To hold down demurrage costs, Installations should not use, to the extent possible, vendor-owned containers for long-term storage in the stock system of materials or products. Returnable containers should not be used for hazardous waste products.

a. Definitions

- (1) A returnable container is any carboy, cylinder, drum, reel, or other container which is designed to hold materials or products, and which is to be returned to a vendor when the contents have been removed or consumed.
- (2) A deposit is a monetary outlay required by vendors as guarantee that their containers will be returned to them when the contents have been removed or consumed.
- (3) A demurrage is a charge made by vendors for returnable containers held in excess of the free loan time allowed by the terms of the contract.

b. General Requirements

Prior to exercising the option to obtain Installation requirements in either returnable or nonreturnable containers, the following factors will be considered:

- (1) Administrative details involved such as bookkeeping and accounting necessary to account for returnable container items while in NASA's possession.
- (2) The advantages of procuring items in low value, non-returnable containers when administrative costs incurred in handling returnable containers would result in increased cost to the Government.
- (3) Possible loss or damage to the containers while in the Government's possession, thereby either precluding any possible refund or reducing the monetary return when the container is returned to the vendor for refund of deposit.
- (4) The possibility of incurring demurrage charges that will equal the cost of the container itself.
- (5) Difficulties to be encountered in ensuring that returnable containers are returned to the proper vendors for credit.
- (6) Handling and transportation costs to be incurred by NASA for the return of empty containers to the vendors.
- (7) Costs involved in ultimate disposal of nonreturnable containers.
- (8) The feasibility of acquiring and utilizing Government-owned containers.

c. Procedures

- (1) The NASA SEMO will establish and maintain current, detailed control records.
- (2) Control records will provide complete, accurate data of returnable container transactions from time of receipt until return to vendors.
- (3) Maintenance of detailed individual records is optional on any returnable container requiring a monetary deposit of \$25.00 or less when demurrage charges are not involved.

- (4) Although detailed records are optional for low value containers, Installations should return them to appropriate vendors to ensure recovery of deposits to the greatest extent possible.
- (5) Low value containers, e.g., drums may be recorded by lot.
- (6) Containers should be tagged or otherwise identified to facilitate identification of vendor-owned containers.
- (7) An adequate suspense system will be maintained on returnable containers to ensure that they are recovered from using organizations and returned to vendors on a timely basis.
- (8) The Financial Management Officer will be provided with necessary information when containers are either received from or returned to a vendor.
- (9) When materials in returnable containers are delivered to a using organization, the recipient will be advised in writing that the container is returnable and must be returned to the vendor as soon as it becomes empty. The recipient also will be advised when the free loan period expires, the amount of any deposit, and the actual demurrage charges after the free loan period.
- (10) If a returnable container is inadvertently used for hazardous waste, the user will advise the SEMO who will initiate action to determine if the container should be purchased from the vendor or remain in a vendor-owned returnable category.

d. Inventory and Reconciliation

- (1) A complete physical inventory of all returnable containers will be made at least once every 3 years and necessary adjustments made to supply and fiscal records.
- (2) Control records should be reconciled annually by comparing the deposits made for containers with the general ledger asset account 1910 (Deposits on Returnable Containers). Adjustments will be made annually to ensure that the records are in balance.
- (3) The SEMO will review records and furnish data, in accordance with Financial Management Manual 9060, Accrual Accounting, to the Financial Management Officer for computation of the accrued demurrage costs.

CHAPTER III: MATERIALS INVENTORY TRANSACTIONS

300 ISSUING ITEMS

- a. All demands against, and issues from, inventory will be documented either through computer record update (for online systems) or through use of a requisitioning document or both.
- b. Issues from Program Stock will be made only to individuals authorized by the controlling program manager.
- c. Issues from Standby Stock will be made only on the authority of the official who requested the item be placed in stock.
- d. Installations will determine the appropriate control system for ensuring that Stores Stock items are issued for official purposes. As a minimum, the system will require the random sampling of issues on a periodic basis to verify the authorization for issue. See paragraph 302 for items requiring special controls.
- e. Each supply operation will maintain a back order system for recording unfilled demands for inventory items and for filling the demand without further action on the requester's part. Installation systems should include provision for issues of available stocks with no back order being established for unfilled quantities, e.g., fill or kill, substitution of similar items for out-of-stock material, or other means for filling a customer's requirement.
- f. Items will be issued in units of issue that are economically sound or easy to handle. Items received in standard packs of 50 cents or less should not be broken into smaller units of issue. If possible, values of units of issue should not be less than 50 cents unless the standard pack is less. Items of 1/4 inch or less in size should not be broken from the standard pack unless they are of very high value.
- g. Installations may establish a system of expending certain Stores Stock line items from inventory and issuing them at no cost to requesters under simplified procedures. Items included in such a system are usually high usage office supplies, forms, and low cost repair parts. Pre-expended items held for issue should not exceed a 30-day supply. The demand data for such items are recorded at the time the quantities are reduced from the item/asset record balance.

301 INVENTORY REPLENISHMENTS

- a. A review point for each stocked item will be established using a formula which provides at least 90 percent assurance that an out-of-stock condition will not occur. A safety stock level will be included as an integral element of the formula to provide added assurance against out-of-stock conditions. The safety stock level is a predetermined quantity, based on EOQ months of supply, which is in addition to normal replenishment leadtime and operating level requirements. See Appendix C for the approved basic formula which includes these factors.
- b. Each supply operation will maintain a due-in system for recording orders from external sources to satisfy back orders or to replenish stocks. Federal Property Management Regulations, Part 101-26.107, lists required sources for satisfying requirements for supplies and services. Prior to submitting orders for material to external sources, Installations shall ensure the material is not available internally.
- c. To use General Services Administration (GSA), the Defense Logistics Agency (DLA), military departments, and other Government agencies as supply sources, Installations must follow the Federal Property Management Regulations, Subchapter G, Subpart 101-26.2, "Federal Requisitioning System," which provides detailed ordering procedures. Before the system can be used, an Activity Address Code (AAC) must be obtained by submitting NASA Form 1603, FEDSTRIP AAC Data (See Appendix F). The AAC is also needed to process NASA excess material for screening and disposal. To obtain an AAC for NASA cost reimbursement contractor activities, Installations must submit NF 1603 along with the data required by the FAR, Subpart 51.1 and NASA FAR Supplement, Subpart 18-51.102. The guidelines associated with acquiring and controlling AAC's are listed as follows:
 - (1) NASA Installations will designate an activity address code coordinator who will interface with the Installation contracting officer and submit all requests from Installations and contractors for assignment of, changes to, or cancellation of AAC's to NASA Headquarters, Supply and Equipment Management Office, Code JIE. Normally, 30 days should be allowed for assignment and activation of AAC's. The coordinator will:
 - (a) For cost reimbursement NASA contracts, ensure the NF 1603 is accompanied by a Letter of Authorization (LOA), issued on NASA letterhead, by the Installation contracting officer to the contractor in accordance with the FAR Part 51,

and the NASA FAR Supplement Subpart 18-51. Contractors authorized to use only the Federal Supply Schedule (FSS) do not need an AAC. A LOA specifying such authorization grants a contractor access to FSS's according to FAR Subpart 8.4.

- (b) Ensure, prior to expiration of the contract which is to be extended, the Installation contracting officer issues an extension of the LOA authority. LOA authority will be extended only when the contract is extended. The extension should be submitted to NASA Headquarters to ensure the AAC is not cancelled.
 - (c) Ensure that requests include the complete consignee address, ZIP code, NASA contract number (where applicable) and information identifying each of the purposes for which the code is used, such as requisitioning office, mailing address for parcel post shipment, freight address, or bill to address. A single AAC will be used for as many different purposes as are practicable.
 - (d) Ensure requests for assignment of, changes to, or cancellation of Installation AAC's include the assigned Agency Location Code (ALC). The various accounting entities and related ALC's are identified in FMM Appendix 9210.8A.
 - (e) Ensure that requests for changes identify the specific change to be made and include a brief explanation of the reason for the change.
 - (f) Ensure that requests for cancellations be submitted as soon as possible after it is known that an activity address code is no longer needed, i.e., termination of contract.
 - (g) Maintain a current consolidated record of activity address codes, supporting documentation, and in-the-clear addresses assigned to the Installation and its contractors.
- (2) The Supply and Equipment Management Office, NASA Headquarters, is the Agency AAC focal point and shall:
- (a) Obtain new AAC's from the General Services Administration (GSA) and transmit to GSA requests for changes, extensions and cancellations of AAC's.

- (b) Advise the requesting Installations of new AAC assignments and provide confirming information when other actions have been accomplished.
 - (c) Maintain a current consolidated record of current codes, supporting documentation and in-the-clear addresses assigned to all NASA activities.
- d. The GSA Customer Supply Centers (CSC's) serve as retail outlets for selected, frequently needed, common-use, expendable-type items. Customer Supply Centers provide a quick and easy method for activities to obtain small lot quantities of common-use GSA stocked items, such as administrative and janitorial supplies, handtools, and other industrial type items. The GSA provides a catalog showing the items stocked at the CSC's, as well as other pertinent information about the CSC operation. To use the CSC, Installations must obtain a special CSC account number and customer access codes from the GSA by submitting GSA Form 3525, "Application for Customer Supply Services." In addition to requesting an account number, the form also authorizes the commitment/obligation of NASA funds for orders placed. Therefore, the form will be signed at an appropriate level of management no lower than the SEMO or equivalent. The SEMO will establish local procedures and controls to govern the Installations' use of the CSC in conformance with GSA's prevailing rules and guidelines.
- e. With respect to Stores Stock:
 - (1) When there are no limiting factors such as space, personnel, funding, or contractual requirements which preclude its application, NASA Installations will replenish Stores Stock using the basic EOQ principle required by FPMR 101.27.
 - (2) When there are limiting factors which preclude use of the basic EOQ technique, a modification of the technique may be made so long as it produces the fewest orders at the lowest level of inventory investment.
 - (3) EOQ tables, based on procurement and possession cost studies performed by Field Installations at the direction of the Supply and Equipment Management Office, NASA Headquarters, will be used in determining the order quantity. See Appendix G for example of cost study and Appendix H for sample of EOQ table.
 - (4) In any event, deviations from the use of prescribed EOQ tables must be approved by the Chief, Supply and Equipment Management Office, NASA Headquarters.

- (5) Exceptions from the EOQ table values may be made for specific items when they:
 - (a) Have a shelf-life less than the specified EOQ;
 - (b) Are for standby or reserve, or involve planned requirement for a special one-time project, e.g., construction materials for a major building renovation;
 - (c) Can be acquired from excess; or
 - (d) Are necessary due to limits on storage space or funds.
 - (6) If the item under review is to be reordered, the average monthly usage (AMU) for the item will be determined by taking the total units issued for the preceding 12 months and dividing by 12. The AMU will be multiplied by the current unit cost to produce the monthly requirement in dollars. The monthly requirement will be compared with the applicable EOQ table and the amount to order (in months of supply) determined.
 - (7) When applying both the EOQ tables and review point formula, the inventory manager should be sensitive to changes in demand patterns and usage which may increase or decrease stock levels. Any review point formula should be designed to react to significant changes in lead time and demand. Inventory managers should also be alert to significant, one-time demands which tend to distort normal usage patterns. Economic order quantities may be adjusted if volume discounts or special delivery terms can be obtained which offset increased costs to buy and hold the item.
 - (8) When the review point is reached, the item will be reordered or the review point changed because demands have decreased thus deferring reorder, or the item will be scheduled for partial or complete excess based on declining demand.
- f. Replenishments of Program Stock will be made when authorized by the program or project manager. Authority to replenish Program Stock may be delegated in writing to the SEMO by the program or project manager. Also, when Program Stock items experience frequent, recurring demands, they should be replenished using the EOQ criteria outlined for Stores Stock (subparagraph e).

- g. Replenishments of Standby Stock will be made if the responsible division chief certifies that replenishment is necessary. This may be a blanket certification given to the SEMO, subject to annual review in accordance with paragraph 306c.

302 SPECIAL ITEM CONTROLS

Certain items have unique features, qualities, or properties which require special controls. Installations will establish special inventory controls and procedures for identification, storage, issue, and where necessary, turn in, requisition, and disposition of such items. The following are examples of types of items which warrant such controls:

- | | |
|----------------------|---|
| a. Medical supplies | g. Hazardous gases or chemicals |
| b. Medicinal alcohol | h. Precious metals |
| c. Photographic film | i. Radioactive materials |
| d. Hand tools | j. Magnetic tapes and audio and video recording tapes |
| e. Dictionaries | k. Attache cases and brief cases |
| f. Explosives | |

303 RETURN TO INVENTORY

- a. Return of items to stocks will be accepted. Installations will determine condition, packaging, marking, and documentation criteria for items returned to stocks.
- b. Credit may be granted to the returning activity for Stores and Standby Stock items which are serviceable and ready for issue. Credit shall be allowed only for returns which can be identified to the appropriation and accounting classification coding (i.e. organization, program, project or functional category) of the activity to which the original issue was made (see also paragraph 203c). Credit will not be allowed for Program Stock, items of excess, items bought direct, items which cannot be returned to inventory due to poor condition or obsolescence and issues made prior to the beginning of the previous fiscal year.

304 TRANSFER BETWEEN STATUS CODES/RECLASSIFICATION

Circumstances may require the transfer of material from one status code to another, i.e., transfer from Stores Stock to Program Stock. Such transfer will be accomplished by

reclassification of the material using the adjustment and documentation processes in paragraph 307e.

305 ADDING LINE ITEMS TO INVENTORY

a. Adding Line Items to Stores Stock

- (1) Each Installation will establish and maintain a system for adding line items to Stores Stock.
- (2) Requests for stockage from Installation personnel will be used as a vehicle for adding line items to stock. Such requests must show enough evidence to support the qualifications for stockage under the criteria of paragraph 205. Requests will be signed and approved by responsible levels of management as designated by the Installation.
- (3) Installation inventory management personnel will review requests for stockage to ensure line items having past sufficient demands or anticipated future demands warrant stockage. Items qualifying for stockage will be forwarded to the designated authority for approval.
- (4) Approval to add qualifying line items to Stores Stock will be granted by the SEMO or designee. Decisions not to stock qualified line items will be documented and retained by the supply organization. The individual requesting the line item be added to stock will be notified of the decision to stock or not.
- (5) Stores Stock items may be expended to, maintained in, and issued from an approved bench stock operation.

b. Adding Items to Program Stock

- (1) Line items which meet the criteria for Program Stock (see paragraph 201b) will be added to Program Stock only on written request of the program or project manager.
- (2) Line items added to Program Stock are to be identified to a specific program or project.
- (3) Program Stock items may be transferred to, maintained in, and issued from an approved bench stock operation.

- c. Adding Items to Standby Stock. Line items which meet the criteria for Standby Stock (see paragraph 201c) will be added to inventory only upon written request by a division chief or equivalent. The request will be furnished to the SEMO and will cite the justification for the items.

306 RETENTION OF INVENTORY

a. Stores Stock

- (1) Stores Stock items, regardless of control systems, which have been in inventory for at least 12 months will be reviewed at least annually for retention or elimination. For items under perpetual inventory control, this review may be accomplished in conjunction with the reorder cycle or when the review point is reached.
- (2) Items will be retained in stock only if they meet the stockage criteria of paragraph 205.

b. Program Stock

- (1) At least once every 2 years a list of items in Program Stock will be provided to the controlling division chief or project manager for review and documentation of need for retention.
 - (a) Program Stock items which have been in the system for more than 24 months, and which have no activity for the 24 months immediately preceding the review, must be rejustified to be retained in Program Stock.
 - (b) Items of Program Stock which are active, managed under the economic order quantity system, and meet the economic stockage criteria of NHB 4100.1, do not have to be reviewed biennially by a division chief or project manager.
 - (c) Items in Program Stock which have activity during the past 2 years but are not under the EOQ system do not have to be reviewed by a division chief or project manager.
 - (d) Items which have been in the system 24 months or less will not be reviewed.
 - (e) Long-lead items and items which have been specifically designated for a future project need not be reviewed until the date for the project has passed, at which time they will be reviewed. Future projects must have a firm future date at the time the items are designated as being needed on that project. If the project is cancelled, the items will be reviewed. If the project is more than 60 months in the future, the retention of the items will be justified.

- (2) If items are retained for a program and that program is cancelled, the items will not be held unless another program is identified and the continued retention is justified by a division chief or project manager.
- (3) In appropriate circumstances, such as, use of leased storage space, the SEMO may levy storage charges for items retained in Program Stock.

c. Standby Stock

- (1) At least once every 2 years, a list of items in Standby Stock will be provided to the controlling division chief or equivalent for review and indication of need for retention. The justification for retention should state for what purpose contingency items are being held.
- (2) In appropriate circumstances, such as use of leased storage space, the SEMO may levy storage charges for items retained in Standby Stock.

- d. Basic guidelines for retention of inventory are contained in Federal Property Management Regulations, Subchapter E, Subpart 101-27.304. Within NASA, stock levels in excess of 60-months' supply should not be retained. Levels over the limit should be disposed of through normal excess procedures. The SEMO may authorize beyond the 60-month period when circumstances, such as cost to reorder and cost to hold clearly warrant such action. When levels fall below the retention limit, the reorder cycle may resume.
- e. The review of the economic retention limit will occur at the same time as the review for continued stockage. Months of supply will be computed on the previous 12 months' demand history.
- f. The economic retention limit may be increased when:
 - (1) The item is of special manufacture and relates to an end item of equipment which is expected to be in use beyond the economic retention time limit; or
 - (2) Costs incident to holding an additional quantity are insignificant and obsolescence or deterioration of the item is unlikely.
- g. The economic retention limit should be reduced when:
 - (1) The related end item of equipment is being phased out or an interchangeable item is available; or

- (2) The item has limited storage life, is likely to become obsolete, or the age and condition of the item does not justify the full retention limit.
- h. The reasons for any increase or decrease to the economic retention limit will be documented.
- i. Items which are marked for deletion from inventory will be coded in the inventory control system to preclude reorder. Users will be notified that the item is to be eliminated from stock when the on-hand balance is depleted through issue or excess. They will be either issued to users until stock is depleted or reported to the Installation Property Disposal Office for redistribution and disposal. Transferring excess items to the Property Disposal Office will be considered an adjustment of inventory (see paragraph 307c(4)). A copy of the adjustment report or, when approved by the Financial Management Officer, a listing of adjustments will be sent by the SEMO to the Financial Management Officer.
- j. The SEMO may hold material items on a temporary basis for a user activity. The nature of NASA operations occasionally makes it desirable to temporarily store user-owned items, in appropriate storage facilities, for a specified period of time. A using activity may request in writing the SEMO to temporarily store materials, such as seasonal items, and items for a planned work/job order, etc., until they are actually needed. The request must state the specific time period for the temporary storage and the reason for storage. The reason should clearly state why the items cannot be currently used or retained in the user's organization.
- k. NASA Installations are authorized to establish and maintain Bench Stocks. Bench stocks consist of low cost, repetitively-used, consumption-type items located at or near points of use to ensure continuous and uninterrupted operations. Bench stocks, by providing such items in close proximity to the user, reduce the user's need to constantly requisition repetitively required items from a central supply.
- (1) With the concurrence of the Installation SEMO, a using activity may establish a bench stock operation-- identifying the specific items and the maximum and minimum quantities of the items to be maintained therein. At the discretion of local management, the SEMO may establish and operate a bench stock in support of a using activity.
- (2) Bench stocks are not to be used as a repository for excess items which cannot otherwise be justified for retention in authorized Stores, Program or Standby Stocks.

The specific requirement for establishing and operating a bench stock follows:

- (a) The using activity and the SEMO shall jointly determine the location of bench stocks, and the items and the quantities of the items to be maintained in the designated bench stocks.
 - (b) For bench stock items drawn/pre-expended from or through Stores Stock and Program Stock inventories, the maximum quantity maintained per line item should not exceed a 60-day supply.
 - (c) Bench stocks shall have records sufficient for identifying the: (1) stock or part number; (2) name; (3) unit of issue; (4) unit price; (5) stock level (maximum/minimum quantities to be stocked); and, (6) stock resupply point of the items maintained therein.
 - (d) An individual shall be designated to oversee the bench stock. The individual shall be responsible, at a minimum, for: (1) adding items to and deleting items from the bench stock; (2) ensuring the quantities of items maintained in the bench stock do not exceed the dollar value and usage thresholds; (3) establishing a simplified method for tracking items received in and drawn from the bench stock; and, (4) periodically reviewing the bench stock to effect resupply as necessary.
 - (e) Controls shall be established to ensure only authorized users draw items from the bench stocks.
- (3) Every effort shall be made to keep bench stocks within the designated usage threshold. However, there may be occasions when it is justified to exceed the threshold on a temporary and limited basis. When this occurs, the using activity shall request approval from the SEMO to temporarily exceed the threshold.

307 ADJUSTMENTS TO MATERIALS INVENTORY

- a. NASA materials inventory records will accurately reflect the balance of material assets on hand and must be reconcilable with financial records. When discrepancies exist between records and material assets, prompt action must be taken to correct, determine the cause, and update balances as necessary. Inventory adjustments are to be used when transaction documents have not been processed or cannot be located to account for the discrepancies.

- b. Record searches to reverse incorrect transactions should be reasonably thorough, but consistent with the magnitude of the error and the probability of individual neglect or misconduct. Except for special controlled items, transaction record searches are not required when the extended value of discrepancy is less than \$50. Such discrepancies may be automatically adjusted; however, the required inventory adjustment document must be processed. The automatic adjustment does not apply to special controlled items which must be fully researched regardless of value of the discrepancy. When materials inventory records are adjusted, corresponding adjustments must be made in the appropriate Financial Management General Ledger Accounts (see FMM 9250).
- c. The following transactions cause gains or losses to the Inventory General Ledger Account 1200 and will be recorded on an Inventory Adjustment Report (NASA Form 1256) in a manual system or on an ADP listing in an automated system.
 - (1) Adjustment of discrepancies between the recorded balance and the physical count quantity of items as a result of a physical inventory (see Chapter IV).
 - (2) Dropping accountability of materials inventory items which are unserviceable due to damage and destruction, obsolescence and deterioration, loss, or theft.
 - (3) Adjustment of record to correct operational errors which cannot be referenced to the original transaction document.
 - (4) Transfer of excess materials to the PDO (Account 1200 to Account 1800).
 - (5) Return to vendors or suppliers (when no other type of transaction is appropriate).
- d. Adjustments from subparagraphs c(1) through c(5) will be processed for approval as follows:
 - (1) When the total dollar value of any one line item is \$500 or more, the adjustment report will be certified by the SEMO or designee and approved by the Inventory Adjustment Officer (IAO). Adjustments from subparagraphs c(4) and c(5), regardless of dollar value of the quantity adjusted, may be approved by either the IAO, the SEMO, or a designee.
 - (2) When the total dollar value of any one item is less than \$500, the adjustment may be certified by a designated individual and approved by the SEMO or a designee other than the certifying individual.

- (3) Approving officials should be satisfied that the adjustment is not the result of carelessness or misappropriation of property. If either condition is suspected, the official will require a survey report. The adjustment report will be approved subject to this action and processed for correction of the inventory records without waiting for the results of the survey action. The SEMO is responsible for initiating property survey action following the guidance in NHB 4200.1, "NASA Equipment Management Manual," Section III, Part 3.
- (4) An explanation of the reasons for all adjustments, including shipments/returns to suppliers and transfers of excesses to the PDO, will be recorded in the ADP system and entered in the remarks section of the adjustment report. In the ADP format, the following codes will be used to identify the adjustments listed in subparagraph c.

<u>Discrepancy</u>	<u>Code</u>
Physical Inventory Discrepancies	01
Damage/Destruction	02
Obsolescence/Deterioration	03
Loss	04
Theft	05
Operational Errors	07
Returns to Vendor	10
Excess Transfers to PDO	11

- (5) Copies of all adjustment reports will be furnished to the Installation Financial Management Officer unless waived by the Installation Financial Management Officer. Copies of inventory adjustment vouchers which transfer items of inventory from Account 1200 to Account 1800 for redistribution or disposal must be sent to the Financial Management Officer by the SEMO. These documents will provide for comparison of records and for periodic reconciliation of financial and property records. With the concurrence of the Financial and Management Officer, copies of adjustment vouchers or summary listings reflecting all pertinent information may be provided for this purpose.
- e. The adjustment type transactions listed below do not generate gains or losses to the inventory account and, therefore, do not need to be processed according to subparagraph d. These transactions may be approved and processed according to locally established procedures. Documentation for these types of adjustment transactions should not be comingled with the documentation for the adjustments which cause gains or losses to the account.

- (1) Change in stock number when the change requires reclassification from one type account to another type account, e.g., from 1203, electrical materials, to 1204, electronic materials.
- (2) Transfers between perpetual inventory records and accounts and periodic inventory records and accounts.
- (3) Adjustment of the record quantity and unit price to agree with changes in unit of issue.
- (4) Reclassification of material from one status code to another (for example, from Stores Stock to Standby Stock).

CHAPTER IV: PHYSICAL INVENTORY OF MATERIALS

400 REQUIREMENT FOR PHYSICAL INVENTORIES

Physical inventories of Installation materials inventory will be taken to determine the accuracy of the records and the adequacy of the control system.

401 INVENTORY METHODS

All inventories under perpetual control will be inventoried annually using the sampling procedures outlined in paragraph 403. However, once every 5 years, a complete lot (wall-to-wall) inventory will be conducted instead of the sample. Installations may schedule the wall-to-wall inventory incrementally by: status code, type account code, storage facility, or any other method which ensures that every item is inventoried at least once every 5 years. If an item is inventoried under the wall-to-wall method of inventory, it need not be included in the sample method until after 12 months. Inventories under periodic (low sales) control will undergo a complete count (wall-to-wall) annually with appropriate adjustment to the inventory control and financial records. A wall-to-wall physical inventory shall also be taken when a contractor responsible for an inventory is replaced.

402 GENERAL PROCEDURES

- a. All the items on record will be included as part of the sample pool or will be counted during a complete inventory. To ensure all locations are identified and all items in the warehouse are properly recorded prior to the inventory, a location validation will be made prior to full lot and wall-to-wall inventories. A location is not required to be validated for sample inventories and, in any event, not more than once a year.
- b. Each count of a materials inventory line item will be taken using a new count card. The individual counting and the individual verifying (if a verifier is used) will sign or initial and date the count card after entering the quantity counted. The record balance will not be entered on a count card prior to the count. When a verifier is used, a recount is not necessary. If, however, the SEMO deems a recount is needed, it will be taken by an individual other than the original counter or verifier. To maintain a system of checks and balances, individuals (warehouse and storage personnel) will not be allowed to inventory materials under their custodial care and responsibility. If such a situation cannot be avoided, then the inventory count must be spot-checked through random sample by an individual who does not have direct custodial responsibility.

- c. The physical inventory control record will clearly show the record quantity, each count quantity, whether or not the count quantity constituted an error or variance, and the resolution of differing counts.

403 SAMPLING PROCEDURES

- a. The sampling procedures outlined in this paragraph are designed to provide reasonable assurance that the inventory control system is adequate. In percentage terms, it provides approximately 95 percent confidence that 85 percent of the records are within the acceptable error limits.
- b. Inventories under perpetual control will be examined using a lot sampling technique. When a lot fails to pass the sample, it will be completely counted and the records adjusted accordingly. Inventories will be taken annually, either all at once or on a scheduled cyclic basis throughout a fiscal year. If, in the judgment of the SEMO, there is a high probability that the sample inventory will be unacceptable, a complete lot or wall-to-wall inventory may be taken without first taking a sample.
- c. Lots will be reasonably uniform in size and will be limited to one status code of inventory (unless the inventory records for all status codes are identically maintained). Each lot may comprise one or more type accounts, i.e., 1201-1215. Type accounts may be split to provide uniform lot sizes.
- d. Sample size and error limits for varying size lots are as follows:

SAMPLE SIZES AND ERROR LIMITS

Lot Size (Line Items)	Sample Size	Error Limits	
		Accept	Reject
2 to 8	2	0	1
9 to 15	3	0	1
16 to 25	5	0	1
26 to 50	8	0	1
51 to 90	13	0	1
91 to 150	20	0	1
151 to 280	32	1	2
281 to 500	50	3	4
501 to 1,200	80	7	8
1,201 to 3,200	125	10	11
3,201 to 10,000	200	21	22
10,001 to 35,000	315	21	22
35,001 to 150,000	500	21	22

- e. Samples will be selected using a constant interval developed from the following formula:

$$\frac{\text{Lot size}}{\text{Sample size}} = \text{constant interval}$$

A group of records the size of the constant interval and composed of the first records in the inventory file will constitute the pool from which the first item in the sample is drawn at random, i.e., the first group of records in the lot that equals the constant interval. Thereafter, the constant interval will be added to the number of the first record selected and each succeeding record number until the sample is selected. The sample size will not deviate from the table. In order to arrive at the sample, additional items will be selected at random from the lot (if the original selection is less) or items will be randomly deleted from the selected sample (if the original selection is oversize).

- f. The selected items will be counted. Line items may be recounted to verify a count. Those which meet or exceed the variance limits of 10 percent in count or value (the limits for an error) will count as a rejection. When the number of rejections equals or exceeds the reject limit in subparagraph d, the sample fails and a complete inventory of the lot will be taken. The complete lot count must be taken within the same fiscal year as the sample.

404 COMPLETE LOT INVENTORY PROCEDURES

- a. When a complete lot inventory is taken, the counts will be compared with the record and errors noted. When either the total of errors reaches 10 percent or more of the total number of line items in the lot, or the total value of gross adjustments (plus and minus) equals or exceeds 10 percent of the value of the lot, the inventory will be considered unacceptable.
- b. When a complete lot inventory is found to be unacceptable, an analysis of the causes for the errors will be performed and corrective action scheduled. A copy of the analysis and the schedule for corrective action will be forwarded to the Supply and Equipment Management Office, Code JIE, NASA Headquarters.

405 ADJUSTMENTS AS A RESULT OF INVENTORIES

Discrepancies between the record balance and the physical balance will be adjusted in accordance with paragraph 307.

406 HIGH DEMAND ITEM REVIEW FOR PERIODIC INVENTORIES

At the time of the annual physical inventory of periodic inventories, a review will be made to determine if any items qualify for transfer from periodic inventory control to perpetual inventory control. Those items qualifying will be transferred.

CHAPTER V: REPORTS AND FORMS

500 ANALYSIS OF INVENTORIES REPORT (NASA FORM 1489) (RCS 10000000232)

All Field Installations will prepare the Analysis of Inventories Report (NASA Form 1489) in accordance with the NASA Financial Management Manual (FMM) 9351. This report will be submitted to NASA Headquarters Financial Management Office through the Headquarters Reporting Module (HRM).

501 MANAGEMENT PRODUCTS FOR INVENTORY SYSTEMS CONTROLLED BY AUTOMATIC DATA PROCESSING

Installation inventory management systems, where applicable, should generate, at minimum, the following output products:

- a. Transaction register showing the history for items having activity during the system cycle or having action pending.
- b. Stock replenishment analysis showing the data necessary to compute the stock position including the EOQ and the new review point.
- c. Stock retention analysis showing the data needed to determine the economical retention limit or stockage criteria for an item. This product may be combined with the stock replenishment analysis and is to be published at least annually.
- d. Inventory file showing all items in the stock system, their National Stock Number (NSN), noun description, unit of issue, unit price, quantity on hand, value, quantity due-in, quantity due-out, 12 months' demand history, and quantity in long supply. This product is an optional reference document which should be published quarterly.
- e. Other products e.g., due-in, due-out, shelf-life, and warehouse location, may be generated by the Installation as needed.

502 HEADQUARTERS REPORTING MODULE (HRM)

The Headquarters Reporting Module (HRM) provides NASA Installations with automated (PC-based) capabilities to compile and transmit certain data to Headquarters by diskette rather than by hardcopy format. The Materials Inventory Management System data required on NASA Form 1324, Semi-annual Report of Personal Property Operations, NASA Form 1619, Physical Inventory of Materials Annual Report and NASA Form 1489, Analysis of Physical Inventory Report, shall be submitted by the Headquarters Reporting Module or in hardcopy by May 15 (Semiannual) and November 15 (Annual).

503 PHYSICAL INVENTORY OF MATERIALS ANNUAL REPORT (NASA FORM 1619)
(RCS10000000230)

Results of the physical inventory of materials annual report will be made to NASA Headquarters as specified in paragraph 502, Headquarters Reporting Module (HRM).

504 SEMIANNUAL REPORT OF PERSONAL PROPERTY MANAGEMENT OPERATIONS
(NASA FORM 1324) (RCS10000000229)

The Semiannual Report of Personal Property Management Operations will be prepared by NASA Installations as specified in paragraph 502, Headquarters Reporting Module (HRM).

505 GENERAL REQUIREMENT FOR ALL REPORTS

All reports will be in agreement for those elements in common. That is, when the same data appears on two or more reports, there will be no discrepancies between the reports. The Headquarters Reporting Module (HRM) diskette is the preferred medium of transmitting report data. However, the appropriate hardcopy NASA form is acceptable. This Instruction applies to NASA Headquarters and all Field Installations. Further, the data reported by the Installations will include data covering component Installations and any on-site contractors for which the Installation retains accountability under the Installation Provided Government Property clause of the NASA FAR Supplement (NFS).

CHAPTER VI: FUNCTIONAL REVIEWS

600 FUNCTIONAL REVIEW COVERAGE AND FREQUENCY

As part of its Agency role as functional manager of supply and equipment operations, the Supply and Equipment Management Office, NASA Headquarters, performs triennial reviews of both supply and equipment operations. For selected Installations, the reviews are conducted biennially. Functional reviews are intended to provide NASA management an assessment of how well Installation supply programs are achieving NASA objectives. Functional reviews can also serve to satisfy the requirement for the internal control program of the Federal Managers Financial Integrity Act of 1982.

601 REVIEW PREPARATIONS

- a. The Installation will be notified in writing 90 days before a review will be conducted. Such notification will request that a senior Installation management official act as the Installation's coordinator and be identified to the Headquarters Supply and Equipment Management Office.
- b. A review team consisting of individuals with appropriate supply and equipment management expertise will be appointed by the Chief, Supply and Equipment Management Office. The review team leader will be responsible for organizing and conducting the review and subsequent publication of the report of the findings, recommendations, and required actions.
- c. The Installation will be requested, by letter, to prepare copies of specified documents and policies relating to supply and equipment management for use by the review team. An Installation presentation at the entrance meeting detailing management workings, relationships, and activities will enable the review team to more fully understand the Installation's implementation of the NHB 4100.1 Materials Inventory Management Manual and other governing directives.
- d. Upon notification of a scheduled review, Installations may wish to conduct a self-evaluation using the outline in Appendix D. As the review is designed to be a management strengthening process, it is believed that such self-evaluations are of significant value to the Installation in assessing both weaknesses and strengths within the supply management program. Effective self-evaluation also enables the Installation to be better prepared for the functional review.

602 ENTRANCE AND EXIT MEETINGS

The review team will hold both entrance and exit meetings with appropriate Installation personnel.

- a. The entrance meeting will be conducted to provide an overview of supply and equipment management operations at the Installation; identify key personnel; arrange for appropriate meetings; and establish provisions for the conduct of the review.
- b. The exit meeting will be devoted to an informal presentation by the review team of its evaluation and findings based on the written draft.

603 REPORT FINDINGS

- a. During the exit meeting, the review team will identify those functions that are not performed in accordance with regulations and discuss actions needed to bring them to full compliance, as well as make recommendations to improve operations. After the review has been completed, the team will prepare a draft report and present it at the exit meeting for review and comment. The final report will include the Installation's comments and the team's response to those comments, when appropriate. The final report will be issued through the cognizant Institutional Associate Administrator to the Installation Director and to Agency management for information and appropriate action. A copy of the final report is provided to other NASA Installations for information.
- b. The report will be structured as follows:
 - (1) Digest, wherein the significant findings deserving the attention of upper management are highlighted.
 - (2) Table of Contents.
 - (3) Introduction, which summarizes the overall program at the Installation, addresses the events of the functional review, and describes the review process.
 - (4) Supply and equipment management report, wherein subsections are identified to specific functions. A detailed statement of findings is made for factors, events, procedures, and documentation relating to each function and any necessary corrective actions or recommendations are specified. Installation comments and the team's response to those comments are made, as appropriate.
 - (5) Exhibits and attachments, which include related letters, organization charts, and other appropriate backup documentation.

APPENDIX A
DEFINITION OF TERMS

APPENDIX A

DEFINITION OF TERMS

NOTE: For definitions related to equipment, see NHB 4200.1, "NASA Equipment Management Manual," for definitions related to disposal see NHB 4300.1, "NASA Personal Property Disposal Manual."

Activity Address Code. A six position code, composed of numbers, letters or a combination of both, assigned for use on requisition documents submitted to Government supply sources, to identify the requisitioner, the consignee, and the payee.

Backorder. A commitment by supply made to a customer and recorded in supply records to issue at a later date an item which was not available upon initial customer demand.

Bench Stock. A stock of low cost, repetitively-used, consumption-type supplies, and repair parts, established at or near points of consumption/use to ensure continuous and uninterrupted operations. Bench stocks are generally restricted to maintenance, repair, fabrication type activities.

Consumption Item. Items which are either consumed in use or which lose their original identity during use by incorporation into, or attachment upon, another item. Consumption items consist of such supplies as maintenance parts, raw materials, office or housekeeping supplies consumed in use, or other similar items.

Demand. A request for issue of an item. A demand may be recurring or nonrecurring.

Direct Delivery. The process of acquiring an item from a source of supply and issuing and charging it directly to a user.

Economic Order Quantity (EOQ). The amount of an item to buy which fulfills the Economic Order Quantity Principle. The EOQ is expressed in months of supply and is derived from an EOQ table.

Economic Order Quantity Principle. A method for determining replenishment order quantities to minimize the cost to buy an item and the cost to hold that item.

Equipment. An item of real or personal property in the configuration of a mechanical, electrical, or electronic apparatus or tool, normally costing in excess of \$50, which may perform a function independently or in conjunction with other equipment or components.

Error. A record to count discrepancies of 10 percent or more, or a dollar variance of 10 percent or more, of the extended value of an inventoried line item.

Excess. Classification assigned to material for which no requirement exists.

Federal Supply Classification. A system developed in the Federal Cataloging System for use in classifying items of supply. The structure of the FSC consists of groups subdivided into classes within each group. Each class covers a relatively homogeneous area of commodities with respect to physical or performance characteristics, or the items included are usually requisitioned or issued simultaneously.

High Demand Item. An item for which the EOQ is less than a 12-month supply. Applies only in a manual system.

Inventory. Means all material being held by an Installation as Stores Stock, Program Stock, or Standby Stock, except for that material actually in process of use or consumption.

Inventory Adjustment. Means a transaction processed to adjust materials inventory record and any imbalances between such records and quantities in stock.

Issue. The process of distributing material from inventory to customer for use or consumption.

Lead Time Demands. The number of times an item is requested during the replenishment lead time.

Long Supply. Items in stock with a level exceeding the authorized stock level, including lead time and safety stock, but excluding quantities declared excess.

Low Demand Item. An item for which the EOQ is a 12-month or more supply. Applies only in a manual system.

Material. As used in this Manual, means supplies, materials, parts, components, assemblies, and items which do not meet the criteria for controlled equipment that are held in inventory prior to issue.

Periodic Inventory Control. The record for each item does not provide the item's quantitative, on-hand balance except at the time of physical inventory. Applies only in a manual system.

Perpetual Inventory Control. The record for each item reflects every quantitative change for the item, providing at any selected time in the system cycle the on-hand balance of that item.

Personal Property. Property of any kind including equipment, materials, and supplies, but excluding real property. Property of any kind or any interest therein, except real property acquired by NASA, including property in transit in Government conveyances or common carriers; storage for stock or disposal; undergoing maintenance, repair, modification or service test; acquired by donations or any other method.

✓ Physical Inventory. The process of physically sighting and counting quantities of materials held in inventory by an installation, reconciling the count with the recorded balance, and processing the necessary documents to adjust the inventory records and the financial accounts.

Pre-expended Material. Pre-expended items are items expended from perpetual inventory control and made available to user under simplified issue procedures at no direct cost.

Program Stock. Material acquired by direct purchase or by issue from Stores Stock for a specific program or project.

Replenishment Lead Time. The period between initiation of a reorder and its receipt in stock.

Repair Part. A part needed to return a higher assembly or component to a serviceable or operational condition.

Returns. Turn-in of unneeded materials from operating personnel for inclusion in the Installation's materials inventory.

Review Point. The point, in units of issue, at which the usage history of an item is analyzed to determine if it should be reordered, or reorder deferred. The review point is usually the sum of lead time stock plus safety stock.

✓ Safety Stock. A quantity included in the normal stockage objective to provide added assurance against stockout conditions.

Sensitive Item. An item which, due to its pilferable nature or the possibility of its being a hazard, requires a stringent degree of control. A sensitive item can be capital or noncapital equipment or materials.

Special Item. An item having such unique qualities, properties, or features as to require special physical and managerial controls.

Standby Stock. Material held to support emergencies.

Stores Stock. Material being held in inventory by the Installation which is repetitively procured, stored, and issued on the basis of recurring demand.

Supply Point. Any facility or area (regardless of location) which normally functions as a point at which material is held and subsequently issued or otherwise made available for use or consumption, including warehouses, stockrooms, self-service facilities shop stores, cribs, bench stocks, and sales stores.

✓ Survey Report. A report of administrative action taken to investigate and review the loss, damage, or destruction of Government property, to adjust the property records, to assemble pertinent

facts, and to determine the extent or absence of personal responsibility for such loss, damage, or destruction.

Variance. Any discrepancy between the count and the record which does not qualify as an error.

APPENDIX B
MATERIALS INVENTORY TYPE ACCOUNTS
SUMMARY

APPENDIX B
MATERIALS INVENTORY TYPE ACCOUNTS
SUMMARY

<u>Type Account Code</u>	<u>Includes Federal Supply Classification Groups</u>
1201 Building Materials	55, 56
1202 Chemicals	68
1203 Electrical Materials	61, 62, 63
1204 Electronic Materials	58, 59, 60
1205 Fuels and Lubricants	13, 91
1206 General Maintenance Materials	30, 31, 38, 39, 40 41, 43, 44, 45, 46 49, 54
1207 General Operating Materials	10, 11, 12, 32, 34, 51, 52, 80, 83, 93, 94
1208 General Service Materials	35, 36, 37, 42, 65, 69, 73, 77, 78, 79, 81, 84, 85, 87, 88, 89, 99
1209 Hardware	53
1210 Instrumentation	66
1211 Metals	95, 96
1212 Missiles, Aircraft, and Vehicles	14, 15, 16, 17, 18, 19, 20, 22, 23, 24, 25, 26, 28, 29
1213 Office Supplies	70, 71, 72, 74, 75, 76,
1214 Photographic Materials	67
1215 Pipes, Valves, and Fittings	47, 48

MATERIALS INVENTORY TYPE ACCOUNTS

TITLE AND DEFINITION

1201 BUILDING MATERIALS

This category includes materials identifiable to Federal Supply Groups:

<u>FS Group</u>	<u>Description</u>
55	Lumber, Millwork, Plywood, and Veneer
56	Construction and Building Materials

1202 CHEMICALS

This category includes materials identifiable to Federal Supply Group:

<u>FS Group</u>	<u>Description</u>
68	Chemical and Chemical Products

1203 ELECTRICAL MATERIALS

This category includes materials identifiable to Federal Supply Groups:

<u>FS Group</u>	<u>Description</u>
61	Electrical Wire and Power and Distribution Equipment
62	Lighting Fixtures and Lamps
63	Alarms and Signal Systems

1204 ELECTRONIC MATERIALS

This category includes materials identifiable to Federal Supply Groups:

<u>FS Group</u>	<u>Description</u>
58	Communication, Detection, and Coherent Radiation Equipment
59	Electrical and Electronic Equipment Components
60	Fiber Optics Materials, Components, Assemblies, and Accessories

1205 FUELS AND LUBRICANTS

This category includes materials identifiable to Federal Supply Groups:

<u>FS Group</u>	<u>Description</u>
13	Ammunition and Explosives
91	Fuels, Lubricants, Oils, and Waxes

1206 GENERAL MAINTENANCE MATERIALS

This category includes materials identifiable to Federal Supply Groups:

<u>FS Group</u>	<u>Description</u>
30	Mechanical Power Transmission Equipment
31	Bearings
38	Construction, Mining, Excavating, and Highway Maintenance Equipment
39	Materials Handling Equipment
40	Rope, Cable, Chain, and Fittings
41	Refrigeration, Air-Conditioning, and Air-Circulating Equipment
43	Pumps and Compressors
44	Furnace, Steam Plant, and Drying Equipment; and Nuclear Reactors
45	Plumbing, Heating, and Sanitation Equipment
46	Water Purification and Sewage Treatment Equipment
49	Maintenance and Repair Shop Equipment
54	Prefabricated Structures and Scaffolding

1207 GENERAL OPERATING MATERIALS

This category includes materials identifiable to Federal Supply Groups:

<u>FS Group</u>	<u>Description</u>
10	Weapons
11	Nuclear Ordinance
12	Fire Control Equipment
32	Woodworking Machinery and Equipment
34	Metalworking Machinery
51	Hand Tools
52	Measuring Tools
80	Brushes, Paints, Sealers, and Adhesives
83	Textiles, Leathers, Furs, Apparel and Shoe Findings, Tents and Flags
93	Nonmetallic Fabricated Materials
94	Nonmetallic Crude Materials

1208 GENERAL SERVICE MATERIALS

This category includes materials identifiable to Federal Supply Groups:

<u>FS Group</u>	<u>Description</u>
35	Service and Trade Equipment
36	Special Industry Machinery
37	Agricultural Machinery and Equipment
42	Fire Fighting, Rescue, and Safety Equipment
65	Medical, Dental, and Veterinary Equipment and Supplies
69	Training Aids and Devices
73	Food Preparation and Serving Equipment
77	Musical Instruments, Phonographs, and Home-Type Radios
78	Recreational and Athletic Equipment
79	Cleaning Equipment and Supplies
81	Containers, Packaging, and Packing Supplies
84	Clothing and Individual Equipment
85	Toiletries
87	Agricultural Supplies
88	Live Animals
89	Subsistence
99	Miscellaneous

1209 HARDWARE

This category includes materials identifiable to Federal Supply Group:

<u>FS Group</u>	<u>Description</u>
53	Hardware and Abrasives

1210 INSTRUMENTATION

This category includes materials identifiable to Federal Supply Group:

<u>FS Group</u>	<u>Description</u>
66	Instruments and Laboratory Equipment

1211 METALS

This category includes materials identifiable to Federal Supply Groups:

<u>FS Group</u>	<u>Description</u>
95	Metal Bars, Sheets, and Shapes
96	Ores, Minerals, and Primary Products thereof

1212 MISSILES, AIRCRAFT, AND VEHICLES

This category includes materials identifiable to Federal Supply Groups:

<u>FS Group</u>	<u>Description</u>
14	Guided Missiles
15	Aircraft and Airframe Structural Components
16	Aircraft Components and Accessories
17	Aircraft Launching, Landing, and Ground Handling Equipment
18	Space Vehicles
19	Ship, Small Craft, Pontoons, and Floating Docks
20	Ship and Marine Equipment
22	Railway Equipment
23	Ground Effect Vehicles, Motor Vehicles, Trailers, and Cycles
24	Tractors
25	Vehicular Equipment Components
26	Tires and Tubes
28	Engines, Turbines, and Components
29	Engine Accessories

1213 OFFICE SUPPLIES

This category includes materials identifiable to Federal Supply Groups:

<u>FS Group</u>	<u>Description</u>
70	General Purpose Automatic Data Processing Equipment, Software, Supplies, and Support Equipment
71	Furniture
72	Household and Commercial Furnishings and Appliances
74	Office Machines and Office Equipment Parts and Components
75	Office Supplies and Devices
76	Books, Maps, and Other Publications

1214 PHOTOGRAPHIC MATERIALS

This category includes materials identifiable to Federal Supply Group:

<u>FS Group</u>	<u>Description</u>
67	Photographic Equipment

1215 PIPES, VALVES, AND FITTINGS

This category includes materials identifiable to Federal Supply Group:

<u>FS Group</u>	<u>Description</u>
47	Pipe, Tubing, Hose, and Fittings
48	Valves

APPENDIX C
BASIC STOCK REORDER FORMULA

APPENDIX C

BASIC STOCK REORDER FORMULA

$$\text{BASIC REORDER FORMULA} = \overset{1}{\text{LEAD TIME STOCK}} + \overset{2}{\text{SAFETY STOCK}} + \text{ECONOMIC ORDER QUANTITY} + \text{BACK ORDERED QUANTITY} - \text{ON HAND QUANTITY} - \text{ON ORDER QUANTITY} = \text{ORDER QUANTITY}$$

*¹ FOR LEAD TIME: .1 X MOST RECENT LEADTIME + .9 X OLD LEAD TIME.

² FOR SAFETY STOCK: 1/2 SAFETY STOCK TABLE.

² SAFETY STOCK TABLE	
MONTHS OF SUPPLY TO ORDER (MONTHS)	SAFETY STOCK ALLOWANCE
9-12	1
5-9	1.25
3-5	1.5
2-3	1.75
1-2	2

* COMPUTE LEAD TIME ON STOCK REPLENISHMENT ORDERS ONLY



APPENDIX D
MATERIALS INVENTORY MANAGEMENT
REVIEW CRITERIA

APPENDIX D
MATERIALS INVENTORY MANAGEMENT
REVIEW CRITERIA

CHAPTER I. GENERAL PROVISIONS

TASK: Each Installation is required to implement the policies and procedures of NHB 4100.1, "Materials Inventory Management Manual," and delineate specific areas of responsibilities.

NARRATIVE: Chapter I outlines the requirements to accomplish the tasks and is evaluated using the following criteria:

<u>FACTOR</u>	<u>CRITERIA</u>
A. Applicability	Unless superseded by Federal regulations or other binding agreements, the provisions of NHB 4100.1 are mandatory (paragraph 101).
B. Changes	Unless otherwise prescribed, changes to NHB 4100.1 must be implemented within 60 calendar days from date of issuance (paragraph 102).
C. Deviation	Deviations from required procedures will be reviewed to determine (a) that they were adequately justified and approved by proper authority and (b) that the procedures of paragraph 103 were followed.
D. Policy	Installation implementation of Materials Inventory Management requirements is to be consistent with the general policies in paragraph 104.
E. Responsibilities	
(1) Installation Directors	NASA Field Installation Directors have the responsibility for all NASA-owned material assests assigned to their Installation and for the specific actions to paragraph 105c.
(2) Supply and Equipment Management Officer	The SEMO is appointed by the Installation Director to perform functional administration of supply and equipment management at the

Installation, including specific responsibilities in paragraph 105d.

- (3) Inventory
Adjustment
Officer (IAO)

The IAO is appointed by the Installation Director, paragraph 105e, and is responsible for reviewing and approving adjustment reports as outlined in Chapter III, paragraph 307.

- (4) Designees

Designees may be authorized in writing by a responsible individual to act in his or her behalf as outlined in paragraph 105f.

- (5) Individual
Employee

Employees are responsible for Government property as outline in Section 1207.103 of NHB 1900.1, "Standards of Conduct for NASA Employees." This responsibility includes the requirements in paragraph 105g.

CHAPTER II. MATERIALS INVENTORY CONTROL

TASK: Each Installation is required to establish and maintain an effective system to identify, document, and control all items of inventory.

NARRATIVE: Chapter II outlines the requirements to accomplish the task and is evaluated using the following criteria:

<u>FACTOR</u>	<u>CRITERIA</u>
A. Classification of Inventories	
(1) Stores Stock	Stores Stock is to be classified as status code 1 and is to consist of "items" which are repetitively procured, stored, and issued on the basis of recurring demand. Such items are defined in paragraph 201a.
(2) Program Stock	Program Stock is to be classified as status code 2 and is to consist of "items" acquired by direct purchase, or by issue from Stores Stock, for a specific program or project. Such items are defined in paragraph 201b.
(3) Standby Stock	Standby Stock is to be classified as status code 3 and is to consist of "items" held for emergencies for which there is no normal recurring demand (paragraph 201c).
B. Type Accounts	In addition to status codes, stocks are further classified by the type accounts (1200 series) shown in Appendix B (paragraph 202).
C. Type Accounts Approval	Type accounts are established according to the guidelines in paragraph 202. Any new accounts require prior approval of the Chief, Supply and Equipment Management Office and Director, Financial Management Division at NASA Headquarters.
D. Pricing by Purchase	The price of items added to inventory by purchase will be determined as outlined in paragraph 203a. The price will be based on

purchase order or invoice price,
less net of trade and payment
discount.

- E. Transfers Transfers are recorded as outlined in paragraph 203b.
- F. Returns Returns are recorded as prescribed in paragraph 203c.
- G. Pricing Averaging The stock record unit prices are to be computed using the weighted moving average (paragraph 203d).
- H. Inventory Control System Installations will establish and maintain an effective system for controlling material inventories, including equipment items designated for a repair program (paragraph 204).
- I. Maintenance of Records Except for Stores Stock, inventory records are to be maintained either at individual supply points under a decentralized system or at one central location for all supply points as provided for in paragraph 204. Stores Stock is to be maintained under a single system.
- J. Perpetual Control System Inventories maintained on an ADP system, high demand items on a manual system, and critical use or security items requiring special attention are to be under perpetual control as required by paragraphs 204c and 204d.
- K. Periodic Control System Low demand items maintained on a manual system except for critical or security items are to be under periodic control using a stock record card as the control record. No issue data is required to be posted and balances are updated through periodic physical inventories according to paragraphs 204e and 204f and paragraph 401.

Annually, during physical inventory, high demand items are to be reviewed to determine if they qualify for transfer to perpetual control (paragraph 406).

- L. Perpetual Control System (Transactions and Data) Individual transactions will be recorded for each item under perpetual control according to paragraph 204d. Transactions require supporting input/output documents or a comparable ADP record as required by paragraphs 204g and 204h.
- M. Stores Stock Determination Factors In determining candidate items for Stores Stock, the EOQ criteria outlined in paragraph 205a is to be used as a primary factor. Other factors are: (a) storage adaptability, (b) anticipated demand patterns, and (c) adequate shelf-life period (paragraph 205b).
- N. Additional Stores Stock Determination Factors Items having insufficient recurring demands may be considered for Stores Stock as outlined in paragraph 205c if (a) advanced purchase is necessary because of long procurement lead time, (b) inadequate industry distribution system, or (c) volume purchases are necessary to take advantage of price or delivery schedules.
- O. Program Stock Determination Items held by any organization, meeting the criteria in paragraph 201b, and duly authorized by a program or project manager may be considered as Program Stock according to paragraph 206.
- P. Non-Controlled Equipment Items Equipment items approved as Program Stock in support of a repair cycle program will be marked and coded on the records to distinguish unique management requirements as required by paragraph 206c.
- Q. Determination of Standby Stock Standby Stock additions and deletions require the justification and concurrence of the using division chief or equivalent as specified in paragraph 207.
- R. Management of Shelf-Life Items NASA Installations are required to develop a shelf-life program according to FPMR, Part 101-27.2, and NHB 4100.1, paragraph 209.

- S. Shelf-life Codes Shelf-life items are to be coded to identify the period in months and years and the type of items as outlined in paragraph 209b.
- T. Types of Shelf-Life Items Shelf-life items are classified as nonextendable (Type I) or extendable (Type II) according to paragraph 209a.
- U. Procurement of Shelf-Life Items In determining the procurement of shelf-life items, the SEMO must, where possible, ensure consideration of such factors as: (a) length of storage time, (b) contracting techniques, (c) specification requirements, and (d) delivery procedures as outlined in paragraph 209c.
- V. Identification and Shipping Requirements Of Shelf-Life Items When practical, manufacturers/suppliers will be required to mark items with appropriate month/year codes and to provide such items with sufficient remaining shelf-life as required by paragraph 209d.
- Care shall be taken to ensure shelf-life items in stock and upon issue to users are properly marked (paragraph 209g.)
- W. Packaging Shelf-Life Items When feasible and economical, shelf-life items are to be packaged to provide maximum protection as required by paragraph 209e.
- X. Control and Inspection Necessary controls are to be established to identify records and storage areas with appropriate shelf-life information as required by paragraph 209f.
- Y. Utilization and Distribution of Shelf-Life Items Any shelf-life item must be reported using the appropriate disposal and supply condition codes as referenced in paragraph 209i.
- Z. Acquisition of Precious Metals Precious metals shall only be acquired for specific/known needs only upon approval by the Installation Director (paragraph 210b(1)). Precious metals shall, to the extent possible, be obtained through Government sources (paragraph 210b(2)).

AA. Control of Precious Metals	Extraordinary controls, from point of receipt to point of use, are necessary for precious metals as required by paragraph 210b(3).
AB. Inventory of Precious Metals	Precious metals shall be inventoried by someone not having possession or custody of the materials as required by paragraph 210b(4).
AC. Reporting of Precious Metals Discrepancies	Losses, including theft, damage or destruction of precious metals in any form, or end-items, will be promptly reported to the Installation Security Officer as required by paragraph 210b(5).
AD. Control of Returnable Containers	Installation shall establish and maintain current and detailed control records on vendor-owned returnable containers, and to hold down costs, vendor-owned containers shall not be used for long-term storage of materials (paragraph 211).
AE. Inventory of Returnable Containers	A complete physical inventory of all returnable containers shall be conducted at least once every 3 years as required by paragraph 211d(1).
AF. Reconciliation of Returnable Container Records	A reconciliation of inventory/financial control records shall be accomplished at least annually as required by paragraph 211d(2).

CHAPTER III. MATERIALS INVENTORY TRANSACTIONS

TASK: To provide effective support, each Installation is required to comply with certain procedures to effect the issue, return, replenishment, periodic validation, and physical count of material inventories.

NARRATIVE: Chapter III outlines basic policy and procedures for the task and is evaluated using the following criteria:

<u>FACTOR</u>	<u>CRITERIA</u>
A. Issue Requests	Demands and issues from inventory require supporting documentation (paragraph 300a).
B. Program Stock Issues	Issues from Program Stock require approval of the controlling program/project manager (paragraph 300b).
C. Standby Stock Issues	Standby Stock issues require the approval of the official who requested the item be stocked (paragraph 300c).
D. Control of Issues	A control system shall be established to ensure that Stores Stock items are issued for official purposes (paragraph 300d).
E. Back Order System	An automatic back order will be established to record unfilled customer demands unless the customer specifies otherwise (paragraph 300e).
F. Units of Issue	Items will be issued in units of issue that are economically feasible or easy to handle. Units of issue under certain conditions are to be specifically structured (paragraph 300f).
G. Pre-expended Inventories	Within certain parameters, selected items are expended from the inventory and issued to customers on a nonreimbursable basis (paragraph 300g).
H. Stock Replenishment	Each stocked item requires a stock level and a review point to provide

at least a 90 percent assurance that stockout situations will not occur. A safety level is required in addition to the normal usage factor to prevent stock outs.

For Stores Stock, the EOQ formula will be applied in computing requirements. Program and Standby Stocks are to be replenished as instructed/approved by appropriate responsible managers (paragraphs 301a, 301e, 301f, 301g and 301h).

- I. Due-In System
Each outstanding order is to be recorded in the due-in records unless such order is for direct delivery to the customer (paragraph 301b).
- J. Use of Other Government Sources
Installations are to consider other Government agencies, such as General Services Administration (GSA) and Defense Logistics Agency (DLA), as primary sources for supplies. To use these sources, Installations must establish activity address codes and maintain required supporting documentation (paragraphs 301b and 301c).
- K. Use of Customer Supply Centers
To use a GSA Customer Supply Center, Installations are to establish an effective system for control of access to the center and for obtaining and processing customer appropriate documentation (paragraph 301d).
- L. Special Item Controls
Special items which are hazardous, susceptible to pilferage or require restrictive usage are to have controls established for receipt, storage, issue, turn-in, and disposition (paragraph 302).
- M. Returns to Inventory
Credit for return of Stores and Standby Stocks to inventory are to be based upon need and condition of items. Credit is not to be allowed for Program Stock, direct procured items, excess items, and other categories of items as outlined in paragraph 303.

- | | | |
|----|--|---|
| N. | Transfer Between Status Codes | Transfers between status codes are to be accomplished by using the adjustment documentation process (paragraph 304). |
| O. | Adding Items to Stores Stock | A system shall be established for adding items to Stores Stock. The system should contain sufficient information, usage data, requests from users, etc., to support the addition of new items to Stores Stock (paragraph 305a). |
| P. | Adding Items to Program Stock and Standby Stock | Items shall be added to Program and Standby Stocks only upon written request from proper authority. Items for Program Stock shall be identified to a specific program or project. Items for Standby Stock shall be for emergency contingencies only (paragraphs 305b and 305c). |
| Q. | Retention of Items in Inventory | Stocks are to be reviewed periodically to determine if usage and/or user recommendation warrants retention in the active inventory (paragraph 306). |
| R. | Holding User Materials in Temporary Storage | User-owned materials held in temporary storage shall be supported by properly approved documentation showing, at a minimum, the reason for storage and the time period for the storage (paragraph 306j). |
| S. | Establishing Bench Stock Operations | With the concurrence of the SEMO, a using activity may establish a bench stock operation consisting of low cost, repetitive-use consumption type items (paragraphs 306k and 306k(1)). |
| | (1) Restricted Use of Bench Stocks | Bench stocks are not to be used as repositories for excess items from other stocks (paragraph 306k(2)). |
| | (2) Combined Stores and Program Stock Items Authorized in Bench Stocks | For bench stock items drawn/pre-expended from both Stores Stock and Program Stock, the maximum quantity maintained per line item shall not exceed a 60-day supply (paragraph 306k(2)b). |

- (3) Bench Stock Records Bench stocks shall have records sufficient for identifying the items maintained therein according to paragraph 306k(2)c.
 - (4) Overseeing Bench Stocks An individual shall be designated to oversee the bench stock; responsible at a minimum for the tasks in paragraph 306k(2)d.
- T. Adjustments to Materials Inventory Inventory adjustments are to be made to correct discrepancies between record balances and material asset balances. Such adjustments shall be documented, approved and reported as required by paragraphs 307 and 405.

CHAPTER IV. PHYSICAL INVENTORY OF MATERIALS

TASK: Installations are required to establish and maintain an effective physical inventory program to validate stock balances and correct discrepancies between records and storage locations.

NARRATIVE: Chapter IV outlines specific requirements to accomplish the task and is evaluated using the following criteria:

<u>FACTOR</u>	<u>CRITERIA</u>
A. Inventory Methods	Stocks are to be physically inventoried using the sample or wall-to-wall method of inventory (paragraph 401).
B. General Procedures	All items on record are to be included in the pool for possible selection when the sample method of inventory is used, and all items must be inventoried when the wall-to-wall method of inventory is used (paragraph 402a). The inventory count/control record will reflect, at a minimum, the: (a) item stock number, (b) record quantity, (c) count quantity and counter(s), (d) variances between record and count, and (e) resolution of variances (paragraphs 402b and 402c).
C. Sampling Procedures	<p>To be acceptable, the sample method must reflect approximately 95 percent confidence that 85 percent of records are correct (paragraph 403a).</p> <p>When a lot sample fails to pass the inventory, all items in the lot are required to be inventoried and adjusted accordingly (paragraphs 403b and 403f).</p>
D. Complete Lot/Wall-to-Wall Inventory	To be acceptable, the error rate for complete lot/wall-to-wall inventories should not exceed 10 percent (paragraph 404).

CHAPTER V. REPORTS AND FORMS

TASK: Installations are required to prepare and submit certain reports on the status and activities of the materials inventory accounts.

NARRATIVE: Chapter V outlines specific requirements to accomplish the task and is evaluated using the following criteria:

<u>FACTOR</u>	<u>CRITERIA</u>
A. Analysis of Inventories	SEMO's are to generate the data necessary for Financial Management Officers to produce the NASA Form 1489 and, along with Financial Management, be jointly responsible for its contents (paragraphs 105d and 307).
B. Systems Reports	At a minimum the system should provide, according to specific schedules, the reports required by paragraphs 501 through 504.

APPENDIX E

SAMPLE SHELF-LIFE REINSPECTION

LETTER

APPENDIX E

SAMPLE SHELF-LIFE INSPECTION/RESPECTION LETTERS

TO: Lewis Research Center
Attn: 86-12/Chief, Structural Design Branch

FROM: Lewis Research Center
21-9/Head, Supply Management Branch

SUBJECT: Inspection/Respection of Type II Shelf-Life Item

The enclosed item(s), (NSN 5330-00-796-4404), has a shelf-life period that will expire on August 12, 1992. As a principal user, we request you determine whether the shelf-life period can be extended. Kindly annotate, below, your findings and return the item(s) to this office no later than July 12, 1989.

Sylvester Brown, Chief
Supply Branch

TO: 21-9/Chief, Supply Branch

FROM: 86-12/Chief, Structural Design Branch

SUBJECT: Results of Inspection/Respection Review of
Shelf-Life Item(s)

REF: NSN 5330-00-796-4404

The referenced item(s) has been reviewed and undergone inspection/testing. The results were:

- a. ☐ Satisfactory/unsatisfactory.
Therefore, we recommend the shelf-life of the item(s) be extended/terminated as appropriate.
- b. ☐ We have determined that a review of the item(s) is not appropriate at this time. The cost of inspection/testing is significant in relation to the value of the item(s).
- c. ☐ Inspection criteria does not apply.
The shelf-life item(s) has a line item inventory value of \$300 or less.

Thomas Thompson

TO: Supervisor, Warehousing Section
FROM: 21-9/Chief, Supply Branch
SUBJECT: Action on Shelf-Life Item(s)

In response to the enclosed memorandum from Code 86-12, we request you take the necessary actions, including warehousing or disposal functions in order to:

- o Approve shelf-life extension.
- o Disapprove extension.

Sylvester Brown

APPENDIX F
FEDSTRIP ACTIVITY ADDRESS
CODE DATA



FEDSTRIP Activity Address Code Data

TO: National Aeronautics and Space Administration Supply and Equipment Management Division Attn: NIE/Activity Address Code Coordinator (Code NIE) Washington, DC 20546	FROM: NASA Johnson Space Center JF5/Activity Address Code Coordinator Houston, TX 77058
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INSTRUCTIONS

The information reflected below shows action(s) to be initiated in accordance with FPMR Subpart 101-26.2, FEDSTRIP Operating Guide. See NHB 4100.1, NASA Materials Inventory Management Manual, Chapter III, paragraph 301; Federal Acquisition Regulation (FAR), Chapter 1, Subpart 51. 1-Contractor Use of Government Supply Sources, FAR Subpart 8. 4-Ordering from Federal Supply Schedules, NASA FAR Supplement, Chapter 18, Part 1851-Use of Government Sources by Contractors.

ACTION REQUIREMENTS

	AAC NUMBER	Contractor <input checked="" type="checkbox"/> Installation <input type="checkbox"/>	Action: A		AAC NUMBER	Contractor <input type="checkbox"/> Installation <input type="checkbox"/>	Action:
MAIL		Worldwide Services Inc. 4323 Taylor Lane - NAS9-10101 Houston, TX 77209		MAIL			
FREIGHT		Worldwide Services Inc. 920 Farmer, Bldg 328 - NAS9-10101 Houston, TX 77209		FREIGHT			
BILLING		SAME AS TYPE 1		BILLING			
MAIL				MAIL			
FREIGHT				FREIGHT			
BILLING				BILLING			

* I = Installation (Include Agency Location Code (ALC); C = NASA Contractor (Enclose required letter of authorization on NASA letterhead stationery).

** A = Add; C = Change; D = Delete; V = Verify; E = Extension

ADDITIONAL COMMENTS (Continue on reverse if necessary)

This AAC is effective February 2, 1992 for a 5-year contract period ending February 28, 1997.

TYPED NAME AND SIGNATURE OF INSTALLATION ACTIVITY ADDRESS CODE COORDINATOR

Sylvester Smith
Sylvester Smith

DATE

1/16/92

APPENDIX G
SAMPLE PROCUREMENT COST
ANALYSIS SUMMARY

APPENDIX G
SAMPLE PROCUREMENT COST ANALYSIS SUMMARY

I. PROCUREMENT COST ANALYSIS SUMMARY
STORES STOCK OPERATION

<u>FUNCTIONS</u>	<u>ACQUISITIONS</u>		
	<u>GROUP 1</u> (FEDSTRIP/ MILSTRIP)	<u>GROUP 2</u> (Requirements Contracts, BPA's BDO's, Imprest Fund, Fed. Schedules.)	<u>GROUP 3</u> (Contracts, Purchase Orders
	<u>Work-Hrs Annual</u> <u>Per Yr Cost</u>	<u>Work-Hrs Annual</u> <u>Per Yr Cost</u>	<u>Work-Hrs Annual</u> <u>Per Yr Cost</u>
A. <u>Supply Management</u>			
1. Determination of Requirements	<u>5372</u> <u>47581</u>	<u>720</u> <u>6745</u>	<u>3376</u> <u>30298</u>
	<u>695</u> <u>6053</u>	<u>120</u> <u>1124</u>	<u>960</u> <u>8995</u>
2. Preparation & Processing of Replenishment Requests (FED/MIL & Other)	<u>2387</u> <u>20989</u>	<u>360</u> <u>3373</u>	<u>1416</u> <u>11933</u>
3. Expediting & Follow-up	<u>1195</u> <u>10738</u>	<u>120</u> <u>1124</u>	<u>400</u> <u>3748</u>
4. Processing Receipt Transaction (i.e., Review, verification, correcting discrepancies	<u>1095</u> <u>9801</u>	<u>120</u> <u>1124</u>	<u>600</u> <u>5622</u>
5. Other	<u>0</u> <u>0</u>	<u>0</u> <u>0</u>	<u>0</u> <u>0</u>

FUNCTIONS

ACQUISITIONS

	<u>GROUP 1</u>		<u>GROUP 2</u>		<u>GROUP 3</u>	
	Work-Hrs Annual Per Yr	Cost	Work-Hrs Annual Per Yr	Cost	Work-Hrs Annual Per Yr	Cost
<u>B. Fiscal Operations</u>						
1. Processing & recording of commitments, obligations, receiving reports, invoices, & payment vouchers	120	1050	0	0	2080	18980
2. Property Accounting Processes	0	0	0	0	40	18180
3. Reconciliation Processes	0	0	0	0	0	800
4. Other Processes	0	0	0	0	0	0

<u>FUNCTIONS</u>	<u>ACQUISITIONS</u>					
	<u>GROUP 1</u>		<u>GROUP 2</u>		<u>GROUP 3</u>	
	<u>Work-Hrs</u> <u>Per Yr</u>	<u>Annual</u> <u>Cost</u>	<u>Work-Hrs</u> <u>Per Yr</u>	<u>Annual</u> <u>Cost</u>	<u>Work-Hrs</u> <u>Per Yr</u>	<u>Annual</u> <u>Cost</u>
<u>C. Procurement Operations</u>	<u>XXX</u>	<u>XXX</u>	<u>1902</u>	<u>16845</u>	<u>19149</u>	<u>172736</u>
1. Preparation & Processing of Purchase Transactions	_____	_____	<u>449</u>	<u>4149</u>	<u>5463</u>	<u>50478</u>
2. Advertising & Awarding of Contracts	_____	_____	<u>449</u>	<u>4149</u>	<u>7932</u>	<u>73292</u>
3. Processing of Receiving Reports	_____	_____	<u>78</u>	<u>666</u>	<u>444</u>	<u>3778</u>
4. Expediting & Follow-up	_____	_____	<u>300</u>	<u>2553</u>	<u>1762</u>	<u>14995</u>
5. Other	_____	_____	<u>626</u>	<u>5328</u>	<u>3548</u>	<u>30193</u>

FUNCTIONSACQUISITIONS

	<u>GROUP 1</u>		<u>GROUP 2</u>		<u>GROUP 3</u>	
	Work-Hrs Annual Per Yr	Cost	Work-Hrs Annual Per Yr	Cost	Work-Hrs Annual Per Yr	Cost
<u>D. Receiving & Storage</u>	9202	88632	8654	12666	5915	56976
1. Receiving and Unpacking	5708	55135	8154	7876	3669	35443
2. Placing in Stock	3203	30686	458	4384	2059	19727
3. Preparation & Processing of Receiving Reports	291	2811	42	406	187	1806
4. Other	0	0	0	0	0	0
<u>E. Mechanized Functions</u>	1031	5827	1583	9084	794	4570
1. Cost of work-hours utilized by Key Punch, EAM, & Computer Operations	635	4540	1010	7222	510	3647
2. Cost for Key-Punch, EAM and Computer Hours Utilized	396	1287	573	1862	284	923
Grand Totals	15725	\$143090	12859	\$45340	31354	\$283560

FUNCTIONS

ACQUISITIONS

	<u>GROUP 1</u>	<u>GROUP 2</u>	<u>GROUP 3</u>
	<u>Work-Hrs Annual</u> <u>Per Yr Cost</u>	<u>Work-Hrs Annual</u> <u>Per Yr Cost</u>	<u>Work-Hrs Annual</u> <u>Per Yr Cost</u>
<u>F. Summary</u>			
1. Cost of Acquiring	<u>\$143090</u>	<u>\$45340</u>	<u>\$283560</u>
Stock			
2. Number of Line Items Ordered	<u>4043</u>	<u>840</u>	<u>3130</u>
3. Acquisition Cost Per Line Item	<u>\$35.40</u>	<u>\$53.97</u>	<u>\$90.59</u>

II. POSSESSION COST ANALYSIS SUMMARY STORES STOCK OPERATIONS

	Work-Hrs Per Yr	Annual Cost
A. <u>Personnel Costs</u>		
1. Prevention of Deterioration	<u>522</u>	<u>3931</u>
2. Conducting Warehouse Inventories	<u>388</u>	<u>3022</u>
3. Preparing & Processing Inventory Adjustments	<u>1102</u>	<u>10326</u>
4. Rewarehousing and Repacking of Stock	<u>2087</u>	<u>15444</u>
5. Other	<u>0</u>	<u>0</u>
Sub Total		<u>\$32723</u>
B. <u>Other Costs</u>		
1. Interest on Average Inventory Investment (10%)		<u>\$227,694.</u>
2. Average net Annual inventory write-offs due to loss, damage, pilferage, deterioration, obsolescence, excess, etc.		<u>\$ 57,812.</u>
Sub Total		<u>\$285,506.</u>
Total Possession Cost		<u>\$318,229.</u>
C. <u>Summary</u>		
1. Total Possession Cost		<u>\$318,229.</u>
2. Average Annual Inventory Value		<u>\$2,276,940.</u>
3. Possession Cost Factory (1 - 2)x100		<u>13.98%</u>

APPENDIX H

SAMPLE ECONOMIC ORDER QUANTITY (EOQ) TABLE

APPENDIX H
SAMPLE ECONOMIC ORDER
QUANTITY (EOQ) TABLE

Langley Research Center

EOQ Tables

<u>Months of Supply</u>	<u>Group I Monthly Requirements</u>	<u>Group II & III Monthly Requirements</u>
12	49.99 and under	102.79 and under
9	50.00 to 99.99	102.80 to 205.59
6	100.00 to 199.99	205.60 to 411.19
5	200.00 to 299.99	411.20 to 616.79
4	300.00 to 499.99	616.80 to 1027.99
3	500.00 to 799.99	1028.00 to 1644.79
2.5	800.00 to 1199.99	1644.80 to 2467.19
2	1200.00 to 1999.99	2467.20 to 4111.99
1.5	2000.00 to 3999.99	4112.00 to 8223.99
1	4000.00 and over	8224.00 and over

